Medical Library

OCT 1 8 1946

Minnesota MEDICINE

PUBLISHED MONTHLY BY THE MINNESOTA STATE MEDICAL ASSOCIATION

SEPTEMBER, 1946

Vol. 29 . . . No. 9

40c a copy—$3.00 a year

Printed in U.S.A.

"~~~Unto the Third and

PROTECTION

PROTECTION against congenital syphilis can often be accomplished by treatment of the expectant mother.

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 **September, 1946** **No. 9**

Contents

CORONARY HEART DISEASE—THE OCCUPATIONAL DISEASE OF DOCTORS.
Newell C. Gilbert, M.D., Chicago, Illinois..... 881

CORONARY HEART DISEASE: PROGNOSIS AND LIFE ADAPTATION.
Arlie R. Barnes, M.D., Rochester, Minnesota.... 886

THE TREATMENT OF THE CORONARY EMERGENCY.
Royal V. Sherman, M.D., Red Wing, Minnesota.. 890

THE OUTLOOK FOR POSTWAR MEDICINE AS SEEN BY A RADIOLOGIST.
B. R. Kirklin, M.D., Rochester, Minnesota..... 893

SURGICAL TREATMENT OF BRONCHIECTASIS.
Thomas J. Kinsella, M.D., Minneapolis, Minnesota 898

THE VALUE OF THE X-RAY EXAMINATION IN THE DIAGNOSIS OF RUPTURED INTEVERTEBRAL DISC.
Harold O. Peterson, M.D., Saint Paul, Minnesota. 904

CLINICAL-PATHOLOGICAL CONFERENCE:
Diagnostic Case Report.
Arthur H. Wells, M.D., Harold H. Joffe, M.D., and *J. K. Butler, M.D.*, Duluth, Minnesota... 905

HISTORY OF MEDICINE IN MINNESOTA:
Notes on the History of Medicine in Fillmore County Prior to 1900. (*Continued from August issue*)
Nora H. Guthrey, Rochester, Minnesota..... 910

PRESIDENT'S LETTER:
Minnesota's 1946 Poliomyelitis Epidemic..... 919

EDITORIAL:
Medical Education and Medical Practice..... 920
Too Many Specialists..... 922
Progress in the Child Health Services Study..... 922
Consumer Controlled Medical Service..... 923

MEDICAL ECONOMICS:
Committee Urges Action on Financing Medical Service 925
MSMA Drafts Official Statement on Wagner-Murray-Dingell Bill 925
"U" Postgraduate Psychiatry Course Gets National Acclaim 927
Conference Studies National Federation of Health Plans 927

MINNEAPOLIS SURGICAL SOCIETY:
Meeting, April 4, 1946..... 928
Intra-arterial Penicillin Therapy for Infections of the Extremities.
J. Ordie Shaffer, M.D., Minneapolis, Minnesota. 928
A New Type of Walking Iron.
Horace G. Scott, M.D., Minneapolis, Minnesota. 933
Acute Non-malignant Perforations of the Colon.
Henry E. Hoffert, M.D., F.A.C.S., Minneapolis, Minnesota 935

IN MEMORIAM 940
REPORTS AND ANNOUNCEMENTS 942
OF GENERAL INTEREST..... 946
BOOK REVIEWS 957

Contents of MINNESOTA MEDICINE copyrighted by Minnesota State Medical Association, 1946.

Entered at the Post Office in Minneapolis as second class mail matter. Accepted for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 13, 1918.

MINNESOTA MEDICINE

OFFICIAL JOURNAL OF THE MINNESOTA STATE MEDICAL ASSOCIATION

Published by the Association under the direction of its Editing and Publishing Committee

Office of Minnesota State Medical Association,
493 Lowry Medical Arts Bldg., Saint Paul 2, Minnesota.

EDITING AND PUBLISHING COMMITTEE

E. M. HAMMES, Saint Paul
PHILIP F. DONOHUE, Saint Paul
H. W. MEYERDING, Rochester
H. A. ROUST, Montevideo
B. O. MORK, JR., Worthington
A. H. WELLS, Duluth
O. W. ROWE, Duluth
T. A. PEPPARD, Minneapolis
HENRY L. ULRICH, Minneapolis
C. L. OPPEGAARD, Crookston

EDITORIAL STAFF

CARL B. DRAKE, Saint Paul, Editor
GEORGE EARL, Saint Paul, Associate Editor
HENRY L. ULRICH, Minneapolis, Associate Editor

BUSINESS MANAGER
J. R. BRUCE

Annual Subscription—$3.00. Single Copies—$0.40. Foreign and Canadian Subscriptions—$3.50.

The right is reserved to reject material submitted for editorial or advertising columns. The Editing and Publishing Committee does not hold itself responsible for views expressed either in editorials or other articles when signed by the author.

Classified advertising—five cents a word; minimum charge, $1.00. Remittance should accompany order.

Display advertising rates on request.

Address all communications concerning the journal to Minnesota Medicine, 2642 University Avenue, Saint Paul 4, Minnesota. Telephone Nestor 2641.

ST. CROIXDALE ON LAKE ST. CROIX

PRESCOTT, WISCONSIN

MAIN BUILDING—ONE OF THE 5 UNITS IN "COTTAGE PLAN"

A Modern Private Sanitarium for the Diagnosis, Care and Treatment of Nervous, Mental and Medical Cases

Located on beautiful Lake St. Croix, eighteen miles from the Twin Cities, it has the advantages of both City and Country. Every facility for treatment provided, including recreational activities and occupational therapy under trained personnel. Close personal supervision given patients, and modern methods of therapy employed. Inspection and coöperation by reputable physicians invited. Rates very reasonable. Illustrated folder on request.

CONSULTING NEUROPSYCHIATRISTS

RESIDENT PHYSICIAN
Howard J. Laney, M.D.
Prescott, Wisconsin
Tel. 39

Hewitt B. Hannah, M.D.
Joel C. Hultkrans, M.D.
511 Medical Arts Building
Minneapolis, Minnesota
Tel. MAin 4672

SUPERINTENDENT
Ella M. Mackie
Prescott, Wisconsin
Tel. 69

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 29 September, 1946 No. 9

CORONARY HEART DISEASE—THE OCCUPATIONAL DISEASE OF DOCTORS

NEWELL C. GILBERT, M.D.

Professor of Medicine, School of Medicine
Northwestern University
Chicago, Illinois

IN THE last decade of the 1700's, there appeared a little volume, the title of which was *The Art of Prolonging Life*. It was written by Christopher William Hufeland[9], at that time a professor of medicine at Jena. He was a kindly, wise, philosophical, Christian gentleman, a friend of Goethe and Schiller, and a friend of whoever his reader might be. There is in this book a great deal concerning the means of prolonging life, and the factors which shorten life, which might well be considered carefully today. Early in the volume, Hufeland gives an account of many men and women who have lived to an extreme old age. Henry Jenkins lived to be 159. His case was well proved by court records. John Parr was active and vigorous at 152. An account of his autopsy follows Harvey's dissertation on the circulation of the blood.

Hufeland takes care to state that—"The most extraordinary instances of longevity are to be found, however, only among those classes of mankind who, amidst bodily labor, and in the open air, lead a simple life agreeable to nature . . ." He was none too sanguine, however, in regard to doctors. "Physicians, who so abundantly dispense to others the means of health and life, ought to claim here a distinguished place. But unfortunately this is not the case. It may be said of them, in general: *Aliis inserviendo consumuntur; aliis mendendo moriuntur.* (In serving others they are consumed; in healing others they are destroyed.) At any rate, mortality is greater among practical physicians than perhaps among men of any other profession. They have the least opportunity of observing those prudential rules and precautions, for preserving health, which they lay down to others; and there are few employments in which the powers both of the body and mind are exposed to so much consumption as in this. Head and feet must be always exercised in common."

This was written 150 years ago, and as far as coronary heart disease is concerned, I think it applies today. I am perfectly aware that a great deal of statistical evidence has been published recently to show that doctors' lives are not shortened by their work. It is possible that the average length of life of the physician does not show any appreciable difference over the average length of life of men in other professions. It is perfectly true also, of course, that the average duration of life of the population as a whole has increased, due to decreased mortality in the earlier decades. The increase in heart disease, cancer, and other ills of later life, parallels the increase in life expectancy. Whether the extremes of age are as frequent as they were at the time of the Emperor Justinian census is another matter.

A great many variables which cannot be determined enter into all statistics, and they should not be taken too seriously. There may be a saving in mortality in the middle decades. In many ways, one might assume that a physician, aside from overwork, would have a longer life than those in other professions. The physician occupies

Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

a favorable position as regards early diagnosis and treatment and, as regards many physical hazards. He is immune to Christian Science and quackery.

In favor of coronary heart disease playing a prominent part in doctors' lives—and deaths—there is a noble array of witnesses: White[14], Musser[11], Willius[15], Smith[12], Kellogg[10], Carr[3], Falk[4], and others. In examining the clinical records of a comparatively equal number of physicians, bankers, lawyers, clergymen, laborers, and farmers, about 300 in each group, and comparing the incidence of coronary sclerosis in each group, Smith[12] found that "there were thirty-three instances of coronary sclerosis among the physicians, sixteen among the bankers, fourteen among the lawyers, fourteen among the clergymen, eight among the laborers, and eight among the farmers. The criteria for the diagnosis were the same in all the groups." The average age was about the same for all groups. Dr. Smith felt, too, that the error in diagnosis might be about the same in all groups. I am inclined to place considerable emphasis on his results which were from an observed group at the Mayo Clinic. One cannot be too sure about mortality statistics. Almost any sudden death is apt to be ascribed to coronary thrombosis. It saves any undue amount of cogitation and settles the whole question very easily.

If we turn to the obituary column of the Journal of the American Medical Association, we will get a very good comparative idea, although coronary thrombosis is probably over-diagnosed here also. Dr. Falk[4] has compiled the data from this column from 1930 to 1940. He finds that the average age of death increased two and one-half years. In that time, all cardiac deaths increased from 35 per cent to 41 per cent. It is doubtful that the slight increase in longevity could account for this latter increase. The percentage of deaths from coronary disease increased from 10 per cent to 46 per cent. Much of this increase is doubtless due to increased accuracy of diagnosis and nomenclature. If we take the last five years from 1935 to 1940, when error in diagnosis may have been less, the percentage increased from 28 per cent to 41 per cent. Figures of the Life Extension Institute show an increase in coronary deaths of 114 per cent over a similar period of seven years, as against the 240 per cent increase for physicians. One can make a great many allowances for a great many errors and still have a difficult time reconciling the percentages of 114 per cent and 240 per cent. The figures for 1944 show a total of about 43 per cent of deaths due to heart disease and about 22 per cent due to coronary disease. The figures for 1945 are essentially the same. Unfortunately for my thesis, however, these figures, 43 per cent and 22 per cent, are approximately the same as the figures for policyholders of the Northwestern Mutual Life Insurance Company, in which all occupations are represented. It is all very inconclusive, and if one were a lawyer, one could argue a very good case either way.

However inconclusive these figures may be, and whatever you may think about them, the fact remains that too many doctors have some manifestation of coronary heart disease, either coronary insufficiency or coronary thrombosis. It seems that we may be very sure that at least two out of five die of heart disease and that one of the two dies of coronary heart disease. A large number of those with coronary insufficiency and angina pectoris, eventually die of coronary thrombosis. Also, in any form of heart disease, impairment of the coronary blood supply to the myocardium is almost invariably a contributory factor, especially if there is myocardial hypertrophy. Now, even if only one doctor in five does die of coronary heart disease, most of us would prefer to be included in the statistics of those who do not die of heart disease and who do not in any way suffer from it. I am sure that none of us is in any hurry to join the heavenly choir.

The health and welfare of the doctor are menaced in two ways as regards coronary disease—by coronary occlusion, and by a coronary insufficiency, with or without anginal pain. The coronary occlusion is usually due to coronary thrombosis, but may be due to other, less frequent causes. Most cases of occlusion are due to "acts of God" which we cannot foresee and have not learned to avoid. But there are many cases of coronary occlusion, especially among physicians, in which I am not so sure but that the patient should share some part of the responsibility with the Lord.

The occurrence of coronary thrombosis in those working under high degrees of stress and strain and anxiety, with inadequate rest, and poorly arranged hours of work, is too frequent in the experience of each of us not to be of significance. Brief episodes of increased nervous strain and

anxiety seem also to play a part. Hochrein long ago called attention to the part played by nervous influences in coronary thrombosis. To quote Smith again, "It has long been recognized that stress, strain, intensity of work and mental worries are factors in the production of coronary sclerosis. A physician's schooling is long and intensive compared with that of the average banker and businessman. Undoubtedly a doctor has used up a great deal of nervous energy by the time he has finished school. Secondly, the nature of a physician's work is much more strenuous, and he has not only the responsibility of health, but oftentimes of life itself in his hands."

The occurrence of coronary thrombosis in many ways parallels the occurrence of coronary insufficiency and angina pectoris. The age incidence is the same in each. The curve starts to rise early in life. It reaches its peak at about sixty years and, in the opinion of some, declines from then on, even though the arteries continue to show progressive degenerative changes. Part of the falling off is due to the elimination of some potential cases by death. Others find that the curve continues to rise with age. von Neusser[13], long ago, at a time when angina pectoris and coronary thrombosis were not differentiated, commented on the decreased incidence of angina pectoris with old age. He ascribed this to the increased degree of arteriosclerosis which might inhibit vasomotor changes in the arteries. Hufeland observed that the physician who "has luckily passed his time of probation, may become an old man. A striking example of this is afforded by our predecessor, Hippocrates, who lived to the age of 104, but he passed more of his time in small villages and in the country, than in great cities."

If we measure the activity of the vagus by the degree of response to carotid sinus pressure, we find here also that the curve begins to rise early in life and reaches a peak at about sixty years, and then apparently declines. We are probably not yet entirely conscious of the part which the autonomic nervous system may play in our body mechanism. We are not sure but what nervous stimuli may alter our coagulation time, and we have reason for thinking that they do. It could be supposed by some of the more imaginative, of whom I am one, that decreased clotting time, with or without vasomotor changes, might result in thromboses in vessels whose walls are already predisposed, and we know that predisposing vascular changes in the coronaries occur early.

All of this, of course, is largely speculative as regards coronary thrombosis, but to my mind it does not seem to be too unreasonable speculation. When we turn to angina pectoris, we are on more sure ground, for there we have a century and a half of recorded observation of the effect upon the coronaries of meals, breathing cold air, and of the emotions, and in addition we have laboratory confirmation of some of these effects. As Hirschfelder[7] said, anginal pain may be incited by any emotion except pity.

There is, of course, no question in regard to the part played by organic changes in the vessel walls in coronary insufficiency, or by congenital anomalies of the coronary arteries. Myocardial hypertrophy from valvular lesions or other causes may impose a greater load upon the coronary circulation. Here, so far, the physician is on common ground with those in other occupations. There is little chance of his occupation of itself inducing structural changes in the arteries. He may be the type who is more prone to coronary disease, or he may be the type who is less prone, but from there on, I do not believe that the physician and those in other occupations are on common ground. The effect of various nervous stimuli inducing clinical evidence of coronary insufficiency, or of angina pectoris, has been the source of constant comment, since Heberden's[6] first account.

I shall not attempt even a brief review of all the evidence indicating the effect of nervous influences upon coronary insufficiency. The evidence was enough to lead many earlier writers to regard angina pectoris as a purely nervous disorder, or to lead others to speak of "true" and "false" angina. Huchard[8] wrote of true angina and of reflex and toxic angina. We have good reason for thinking that angina pectoris may result from vasomotor influences not only in hearts with damaged vessels, but in those whose vessels are normal for the age. The presence of anatomical changes in the coronaries at autopsy assumes less significance when we remember that at forty-five most of us have definite advanced changes, and when we realize what a large number of individuals with very arteriosclerotic coronaries live to a very comfortable, extreme old age, without a symptom of coronary disease.

There are few of us so fortunate, or so rugged,

as not to have had personal experience regarding effect of fatigue, or worry, or emotion on gastro-intestinal motility and secretion. We only need our own experience to tell us that with fatigue comes a lowering of the threshold to autonomic stimuli, and an overresponse to such stimuli. A little incident, having no effect when we are rested, may have a great effect when we are tired or under emotional stress.

Evidence of coronary insufficiency will result if effort causes a greater demand for blood to the heart muscle than damaged arteries can supply. Vasomotor narrowing of the coronary vessel will cause the same disproportion between demand and supply and will again result in coronary insufficiency. Increased vasoconstrictive tone, or decreased vasodilator tone may also render the blood supply to the heart muscle insufficient.

The more frequent occurrence of anginal pain after meals has been noted since Heberden. Coronary deaths after meals are not infrequent. Part of this is due to the increased circulatory demands after meals, but not all. In the experimental animal, if the stomach, the esophagus, or hiatal orifice are distended, or if the free abdominal cavity is distended with air, there is a marked decrease in coronary flow which can be measured (Gilbert[5]). This does not occur if the vagi are sectioned or if atropine is administered. Clinically, if patients subject to angina of effort, are asked to breathe an oxygen-poor mixture, the pain comes on sooner after meals. It does not do this if atropine is administered. In some cases, the pain may occur after a longer interval than normal after atropine, even with the meal, because of the decrease in vasoconstrictor tone due to the atropine.

Hiatus hernia is a frequent cause of reflex anginal pain. Hiatus hernia is most frequently due to increased intra-abdominal pressure which can be obviated by moderate attention to diet, and especially by a more moderate use of concentrated carbohydrates in the form of alcoholic beverages. As Dr. White observed, many doctors are too fat, and he speaks of a "Smithfield ham and Lynnhaven oyster doctor" friend of his, who got into serious trouble at sixty. But hiatus hernia itself may also result from a shortening of the esophageal fibers and traction of the stomach upwards by a vago-vagal reflex. Here again, nervous factors are valent. Gall-bladder disease is a frequent source of vago vagal reflexes affecting the coronaries, as are esophageal diverticula or diverticula of the duodenum. These sources of trouble are much more potent under the same nervous conditions of which we have spoken, and are decreased or eliminated by atropine, or belladonna and phenobarbital, but best of all by rest.

Other sources of reflex stimulation may be connected with the pleura or bronchi, and it is a question whether part of the effect of smoking is not due to bronchial irritation.

The occurrence of coronary insufficiency upon breathing cold air through the nose may result in anginal pain, or in pulmonary edema in some cases of organic heart disease. This reflex decrease in flow can also be demonstrated in the experimental animal. It is eliminated only in part by atropine, but a part of the effect is due to a decrease in sympathetic tone. Another reflex shown by Anrep[1] is the vasoconstriction resulting from increased intracephalic pressure when the blood pressure passes a critical level. And this again, has been shown to be vagal.

I have gone into these reflexes in some detail because in these cases we have confirmatory experimental evidence of the part played by nervous stimuli. As I have said before, they are more prone to occur under conditions of chronic fatigue and stress and anxiety. Under such conditions they are more apt to occur with the tired and overworked doctor, in which, as Hufeland says, the "power of both body and mind are subject to so much consumption" and whose "head and feet must exercise in common." Part of this is unavoidable. Much of it is avoidable, and the physician should remember that the "facts of life" apply also to him.

Such reflexes may produce sufficient vasomotor changes to cause symptoms in a heart quite normal for the age. They assume much more serious proportions in a heart whose vessels are already damaged and insufficient, and in the presence of valvular lesions and hypertrophy.

Another point to be kept in mind is that such episodes of recurring insufficiency oft repeated or prolonged, may result in permanent myocardial damage. This was shown experimentally at the Banting Institute when the vagus in the dog was stimulated daily over long periods of time. Blumgart[2] has shown that even very short periods of decreased blood supply to the heart muscle may cause histological changes. Such episodes are to be avoided, even by the doctor. He has no more

business eating a hurried or too ample meal and then getting right up and going to work than has his patient.

I assume that no doctor will be up and at work when he has sufficient anemia to interfere with the blood supply to the heart. And I wish that I could assume that he is watching his urine and blood sugar, and that he is being careful about a hypoglycemia if he is using insulin. Also, aside from diabetes, blood sugar should be watched if there is any anginal pain or coronary insufficiency between meals. Even with a normal fasting blood sugar, a hard afternoon's work may result in hypoglycemia.

I am loath to mention so delicate a subject, but the fact remains that smoking may in some people result in coronary vasoconstriction, and even very moderate smoking in some people. The fact that some chronic smokers do not ever have symptoms, does not alter the fact that some do. And my audience might give *that* a little soul-searching thought. Says A. T. Todd: "Not for nothing is coronary thrombosis called the 'surgeon's disease.' Half of his working day, the surgeon stands in a vitiated atmosphere, 'holding his breath' at that, and the rest of the day in his car, inhaling his own cigarette smoke."

I am not going to great lengths as to advice. The moral of all this is plain. The advice can be summed up as follows: Do as you advise others to do.

I am convinced that people overworking, under nervous tension, and doctors especially, are more prone to coronary heart disease than others. I am convinced too, that part of it at least can be avoided, by following the same "prudential rules" which the doctors lay down for their patients. They should seek what Hufeland calls the *extensive* life, in contradistinction to the *intensive* life, by being moderate in all things, food, work, and play. As Dr. George Palmer used to advise, no one should dash through life; rather, as far as is compatible with duty, he should quietly and thoughtfully saunter through life.

Bibliography

1. Anrep, G. V.: Lane Medical Lectures: Studies in Cardiovascular regulation. Stanford University, California: Stanford University Press, 1936.
2. Blumgart, Herman L.; Hoff, Habel, Landowne, Milton, and Schlesinger, Monroe J.: Experimental studies on the effect of temporary occlusion of the coronary arteries. Tr. A. Am. Physicians, 42:210, 1937.
3. Carr, James G.: The incidence of acute disease of the coronary arteries in physicians. Northwestern U. Med. School Quart. Bull., 14:54-56, 1940.
4. Falk, O. P. J.: Coronary disease in the doctor. Illinois M. J., 80:115, 1941.
5. Gilbert N. C.: Influence of extrinsic factors on the coronary flow and clinical course of heart disease Bull. New York Acad. Med., 18:83, 1942.
6. Heberden, William: On an angina pectoris. Med. Trans. Royal College of Physicians, 3:1, 1785.
7. Hirschfelder, Arthur Douglas: Diseases of the heart and aorta. Third ed., Philadelphia: Lippincott, 1918.
8. Huchard, H.: Traite clinique des maladies du coeur et de l'Aorte. Paris, 1905.
9. Hufeland, Christopher William: The art of prolonging life. The English translation, 1797.
10. Kellogg, F.: Physical defects among physicians and other applicants for commission. Army Med. Bull., 68:158, 1943.
11. Musser, J. H.: The doctor's heart. Ohio State M. J., 40:123, 1944.
12. Smith, H. L.: Incidence of coronary sclerosis among physicians. J.A.M.A., 108:1327, 1937.
13. von Neusser, Edmund: Clinical treatises on the symptomatology and diagnosis of disorders of respiration and circulation. New York: E. B. Treat & Co., 1909.
14. White, P. D.: The physician himself. J.A.M.A., 115:1495, 1940
15. Willius, F. A.: A talk on cardiac diseases among physicians. Proc. Staff Meet., Mayo Clin., 16:714, 1941.

SECRETARY OF WAR APPOINTS MEDICAL ADVISORY COMMITTEE

Secretary of War Robert P. Patterson recently announced appointment of a medical advisory committee to the Secretary of War, to maintain and foster close relations between civilian and Army medicine, and to enable the Army to receive advice on Army medical organization and policies from leaders in civilian medicine.

Members of the new committee are: Dr. Edward D. Churchill of Boston, Chairman; Dr. Elliott Cutler, Moseley Professor of Surgery at Harvard University; Dr. Michael DeBakey of the Tulane University Medical School; Dr. Eli Ginsberg of Columbia University; Dr. William C. Menninger, Director of the Menninger Clinic, Topeka, Kansas; Dr. Hugh J. Morgan, Professor of Medicine, Vanderbilt University Medical School, and Dr. Maurice C. Pincoffs, Professor of Medicine, University of Maryland.

All members of the committee served with the Medical Department of the Army during the war, either as officers or in a civilian capacity, and are intimately familiar with Army medicine. Dr. Churchill, the chairman, was the Army's consultant in surgery in the Mediterranean Theater. He is Professor of Surgery at Harvard Medical School and President of the American Surgical Association.

During the war, more than 95 per cent of Army Doctors were drawn from Civilian medicine. Most of these, except recent graduates of the Army Specialized Training Program, have been released from the Army and have returned to their civilian practices.

Major General Norman T. Kirk, Surgeon General of the Army, previously announced a policy under which distinguished civilian doctors will serve as consultants in their respective specialties in Army general hospitals. —*News Notes*—Office of the Surgeon General, August 31, 1946.

CORONARY HEART DISEASE: PROGNOSIS AND LIFE ADAPTATION

ARLIE R. BARNES, M.D.
Rochester, Minnesota

IN ANY discussion on the prognosis in cases of heart disease associated with insufficiency of the coronary circulation, it might as well be admitted at the outset that the length of time that a given patient will survive an attack of acute myocardial infarction or the onset of angina pectoris is not known. Something is known about the average survival time of a large number of patients but this information does not provide an answer to the question of survival of the individual patient. Every patient presents an individual problem and his life expectancy is determined by many variable factors, some of which are recognizable and predictable and others of which are not. I am reminded of Hutchison's remark, "in medicine there abideth faith, hope and charity: We have diagnosis which is a matter of faith, prognosis which is a question of hope, and treatment which too often is an affair of charity."

Immediate Prognosis in Acute Myocardial Infarction

About 20 to 25 per cent of the patients who have an attack of acute myocardial infarction will succumb in their first attack. The severity or duration of the pain matters little. On the other hand, if the pulse pressure is less than 20 mm. of mercury or if the systolic blood pressure falls to 80 mm. of mercury or less, the prospect of survival is diminished.[3] Leukocyte counts of more than 15,000 per cubic millimeter of blood and temperatures of 103°F. or more give an unfavorable outlook. Heart rates of 120 or more per minute, frequent ventricular extrasystoles, auricular fibrillation and varying degrees of conduction disturbances seriously diminish the chance of survival. Dyspnea must be viewed with apprehension; the greater its severity the more grave the prognosis. The chance of survival diminishes progressively with advancing age. Since, on the average, acute myocardial infarction occurs later in life in women than in men and since hypertension is more prevalent in women, the immediate mortality is greater in women. In both sexes hypertension and its concomitant cardiac enlargement leave the outcome less hopeful. It is of no consequence whether the region of infarction involves the anterior or posterior portion of the left ventricle. In general, if a patient who previously had normal blood pressure and a heart of normal size maintains a good level of blood pressure, a moderate elevation of temperature and of the leukocyte count, and does not have tachycardia, arrhythmia or disturbances of conduction in an attack of acute myocardial infarction, his chances of recovery are excellent.

Ultimate Prognosis of Acute Myocardial Infarction

There are no satisfactory statistics bearing on the life expectancy of patients after the first attack of acute myocardial infarction because in most series of patients studied there are many who still survive. Here again the outcome is tempered by many factors. The younger the patient is at the time of the attack, the better the prospect for long survival. The duration of life is distinctly less for women than for men. The absence of subsequent acute myocardial infarction or of congestive heart failure lengthens the span of life. A similar favorable influence is the lack of hypertension or of cardiac enlargement.

Perhaps the best picture of survival is conveyed by 278 patients followed by Conner and Holt. At the end of one year after the first attack 75 per cent of the patients were alive, at two years 56 per cent, at three years 42 per cent, at five years 21 per cent and at ten years 3.4 per cent were alive. The degree of recovery is revealed by Levine's study[4] which indicated that 30 per cent of patients returned to essentially full duty for an appreciable period of time and 45 per cent to partial duty. These figures are no solace to the patient and do not belong in his possession since they deal with averages. Physicians see many patients who exceed the average life expectancy but have no way of knowing whether a particular patient will fall in that coveted group. As Levine has stated, physicians owe it to these patients to give a guarded but hopeful prognosis.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota. Read before the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

Prognosis in Angina Pectoris

More satisfactory data are available on the life expectancy of patients with angina pectoris and, on the whole, it is much more hopeful than was believed formerly. White, Bland and Miskall made a study of 497 patients who had angina pectoris. Their observations were made over a period of twenty-three years in some cases. Fifty-two of the patients were still alive at the time the study was reported. The patients who died lived on the average just less than eight years. The average duration of life of the patients who had angina and who were still living was 18.4 years.

Parker and associates found that slightly more than half their patients were alive five years after the diagnosis of angina pectoris was made at the Mayo Clinic. The survival curve for the patients after onset of angina pectoris in their series as compared to the survival curve for the normal population of same age and sex indicates a decided decrease of the life expectancy of a patient with angina pectoris.

At ten years following onset of angina only forty-two persons out of a hundred had survived as compared with seventy-five from the normal population. At twenty years the respective figures were fifteen and thirty-nine. Cardiac hypertrophy, hypertension, myocardial infarction, either preceding or subsequent to the onset of angina pectoris, congestive failure and significant changes in the T or Q waves or disturbances of cardiac conduction lead to a decline of the patient's prospect of long survival.

Here again a definite prediction of the duration of life in a given case is hazardous even in terms of averages. But the length of survival is heartening enough so that the wise physician will adopt an optimistic attitude. He will seek to enlist the patient's co-operation because of the prospect that his life expectancy is linked with the completeness with which he adopts a sensible course of living.

Life Adaptation for Patients Who Have Recovered from Acute Myocardial Infarction

In the previous discussion it is apparent that no definite knowledge is available concerning how long a specific patient may survive after acute myocardial infarction. But it is true, nevertheless, that some patients survive for many years, and it is always possible that the patient at hand may have that fortunate outlook. It is best, therefore, to be optimistic in discussions with patients. Mental reservations about life expectancy should be given to the relatives of the patient rather than given to the patient himself. Exceptions to this rule may be necessary in instances in which the patient contemplates some new and formidable undertaking.

It is well for the patient to know that a vessel of the heart has been closed and that his recovery denotes that nature has provided his heart with detours of circulation, a process that may be assumed to continue in the years to come. He should understand that the object of the early restrictions imposed is to provide adequate time for the full development of this collateral circulation.

The duration and degree of restriction are a matter of personal opinion and I know of no controlled studies that indicate the optimal requirements. Certainly all physicians can agree that the patient should observe the greatest care for at least three months after acute coronary occlusion. It is in the program after that time that practices diverge. For my own part, I am convinced that much is gained if the patient lives guardedly for several months longer. I am inclined to think of the convalescence of these patients much as that of a patient who has pulmonary tuberculosis. In the presence of the latter the physician does not hesitate to modify the patient's way of living for many months and to teach him how to lead a protected life henceforth.

In the first year after coronary occlusion, walking in moderation is permissible provided angina pectoris is not produced thereby. The injunction against climbing stairs has always seemed unnecessary to me if it is tolerated without pain and provided it is not done hurriedly. But these patients should secure much more rest than the average patient. This can be provided in the first year if they spend ten hours in bed at night and rest two hours in the daytime, one hour of which should follow their noonday meal. The question of allowing some work at the office must be decided on an individual basis, taking into account the nature of the duties involved and the temperament of the individual. For intensive individuals who face perplexing situations it is much better to postpone business responsibility many months and often for a year or more. Many of these

patients have carried their nervous tension almost to the breaking point at the time of their seizure. They are in grave need of a fallow season in order that their nervous organization and their judgment may regain a level keel. They must learn that the tempo and demands of an ambitious life are incompatible with a maximal duration of survival. In short, they must become acquainted and enamored with a new and luxurious existence embodied in the word "tranquillity."

The quantity, not the quality, of the diet is important. Reduction of weight is important if the patient is much above his normal weight. Patients should be warned to beware of excessively large meals and particularly to guard against overexertion following a full meal. Smaller and more frequent meals are preferable. Smoking preferably is forbidden but, if allowed only in the greatest moderation. Alcohol is not contraindicated if used judiciously and there are many who believe that a cocktail before dinner has its usefulness, particularly if it induces a release from nervous tension.

Life Adaptation for Patients Who Have Angina Pectoris

Since we know that many patients who have angina pectoris already have suffered myocardial infarction, with or without coronary occlusion, it follows that much of the preceding program can be applied to them. The program of adjustment for these patients must include the physical, mental and metabolic aspects of their existence.

The first injunction to patients with angina pectoris should be that they restrict their exertion within the limits of the production of anginal pain. Attacks of angina will not be looked on too lightly if the physician recalls the chronic and perhaps insular infarction revealed at necropsy in the absence of coronary occlusion, or the fact that many patients with angina pectoris have had chronic closure of one or more vessels. Patients will be assisted materially if they are warned that exercise soon after a meal is particularly prone to result in anginal pain. If pain is produced by defecation or by a bath, it often may be forestalled if the patient takes a tablet of nitroglycerin prior to those exertions. Their liability to pain often seems reduced if they take ¼ grain (0.016 gm.) of phenobarbital four times daily and, possibly so, if they take one of the xanthine drugs in an appropriate amount. Many patients can undergo exertion in a warm climate that simply cannot be tolerated in a cold climate.

On the mental side, patients should strive to achieve nervous and muscular relaxation. To use Stevenson's phrase, they must "sit loosely in the saddle." They should learn not to hurry and for that purpose their hours of responsibility should be shortened materially. They must forego the luxury of short tempers. They must remain unruffled in the face of aggravations. Excitement should be avoided. Far too many men die of their coronary disease in exciting moments at a football game or at a boxing match. A noonday siesta is an indispensable boon. Relaxing vacations spent in fishing, photography or similar activities, particularly if pursued in mild climates, are of great worth.

The same injunctions about food, drink and tobacco, which were suggested for patients after acute myocardial infarction, apply to patients with angina pectoris. If the value for blood cholesterol and blood fats are high, if seems worth while to instruct the patient in a diet low in animal fat, though it must be admitted that the relation of high blood fats to coronary sclerosis is not known precisely. It must be added that there is no certainty that in any given case excessive blood fats can be reduced satisfactorily by diet.

There remain to be considered certain patients who have angina pectoris on the slightest provocation or at rest in bed. In some instances this situation is improved greatly if the patient has one month of complete rest in bed. This program may be assisted in some instances by proper sedation combined with the intravenous administration of aminophylline two or three times daily.

Finally, a word must be said about those patients whose mild symptoms of angina pectoris suddenly become more severe or frequent, and about those whose anginal syndrome suddenly reappears after it has been absent for a considerable period after acute coronary occlusion. Such situations suggest strongly that one or more coronary branches have been closed or that closure is imminent. Under such circumstances it is safest to institute a program of several weeks of rest in bed not unlike that ordered for patients who have suffered from an acute myocardial infarction.

Prevention of Disease of the Coronary Arteries

The people clamor for guidance to enable them to escape the development of disease of the coronary arteries but it is by no means certain that they can, or will, make the adaptations in living that appear to be required. As physicians we are not too certain what adjustments are demanded. There is undoubted actuarial evidence that obesity shortens the span of life. There is ample evidence that obesity predisposes to diabetes mellitus as well as increases its severity and it is well known that diabetes mellitus accentuates the development of arterial degeneration. Several studies have indicated a definite reduction of life expectancy in those who smoke excessively and experience indicates that much of this increased mortality results from the effects of coronary sclerosis. There is much to suggest that the more or less sudden cessation of regular exercise when men reach their third and fourth decades is unwise. On the other hand, indulgence in ultrastrenuous and, especially, in unaccustomed exertion after the age of forty may have tragic consequences for the heart.

It is difficult not to link the great incidence of coronary sclerosis in this country with our way of life. We are a strenuous and restless people and we do not achieve much tranquillity of living. But the tempo and demands of living in the last three decades do not lend themselves to easy adjustment. This is as true of nations as it is of individuals. The individual who decides to indulge himself in the luxurious attitude of "dolce farniente" is apt to find himself outdistanced. To ask people to give up their stress of living is like crying "Peace, peace, when there is no peace." When the social structure and ideals of our civilization will allow individuals to live leisurely and to survive, then we may anticipate some amelioration of coronary sclerosis insofar as it is related to the stress of living. Until then we must seek diligently such makeshifts of relaxation and leisurely living as our struggle for existence will permit.

References

1. Conner, L. A., and Holt, Evelyn: The subsequent course and prognosis in coronary thrombosis; an analysis of 287 cases. Am. Heart J., 5:705-719, (Aug.) 1930.
2. Hutchison, Robert: Quoted in editorial: A prognosis series. Lancet, 1:691-692, (Mar. 31) 1934.
3. Levine, S. A.: The prognosis of coronary occlusion: part I. Mod. Concepts Cardiovasc. Dis., vol. 11, (May) 1942.
4. Levine, S. A.: The prognosis of coronary occlusion: part II. Ultimate prognosis. Mod. Concepts Cardiovasc. Dis., vol. 11, (June) 1942.
5. Parker, R. L.; Dry, T. J.; Willius, F. A., and Gage, R. P.: Life expectancy in angina pectoris J.A.M.A., 131:95-100, (May 11) 1946.
6. White, P. D.; Bland, E. F., and Miskall, E. W.: The prognosis of angina pectoris; a long time follow-up of 497 cases, including a note on seventy-five additional cases of angina pectoris decubitus. J.A.M.A., 123:801-804, (Nov. 27) 1943.

THE VIRAL ETIOLOGY OF CONGENITAL ANOMALIES

Evidence of a casual relationship between viral infections in early pregnancy and congenital anomalies in the offspring has been accumulating since Gregg[1], of Australia, reported in 1941 a high incidence of congenital cataract following maternal rubella. Since that report, approximately 150 cases have been published in which congenital cataract, cardiac malformation, cerebral dysgenesis, deaf-mutism, microphthalmos, biliary atresia, and glomerulosclerosis have followed the occurrence of maternal rubella (and less frequently of measles and influenza), usually in the first two or three months of gestation. The bulk of these reports were Australian, some American, and a few British.

Recently, Conte, McCammon, and Christie[2] investigated, in Tennessee, 120 children with congenital defects and found that only 4.2 per cent had a history of gestational maternal rubella. Fox and Bortin[3] in three epidemics occurring in Milwaukee between 1924 and 1944 found only one anomalous infant among eleven pregnancies complicated by rubella. These adverse reports indicate that the correlation of material rubella and congenital defects is not a consistent one, despite the impression of some earlier authors who found an exceedingly high positive correlation. Further studies by virologists, clinicians, and statisticians are necessary to answer the following questions: Why has the connection between virus disease and anomalies only recently been described? Is this a new disease? Why do more severe viral infections often leave the infant unharmed? Why is the incidence apparently different in different localities? Are the defects the result of a specific viral infection, or is the time of involvement relative to embryologic development of equal or greater importance?

The work of Warkany[4] showing an etiologic relationship between maternal diet and congenital anomalies in animals is pertinent to the present problem. Possibly, lesions similar to those he observed have confused some reports attributing anomalies to rubella. In any case, the fact that similar anomalies can be produced by widely different etiologic agents indicates a lack of specificity of these agents and suggests that the stage of embryologic development in which they act is the more important factor.

More knowledge is obviously necessary to validate the suggestion that abortion be performed as a Public Health measure in all cases of early pregnancy complicated by rubella.[5,6]—Editorial, *New York State J. Med.*, April 15, 1946.

1. Gregg, N. McA.: Tr. Ophth. Soc. Australia 3:35 (1941).
2. Conte, W. R., McCammon, C. S., and Christie, A.: Am. J. Dis. Child, 70:301 (1945).
3. Fox, M. J., and Bortin, M.M.: J.A.M.A., 130:568 (1946).
4. Warkany: Science, 92:383 (1940). J. Nutrition, 27:477 (1944).
5. Swann, et al.: Med. J. Australia, 2:201 (1943).
6. Ericson, C. A.: J. Pediat., 25:281 (1944).

THE TREATMENT OF THE CORONARY EMERGENCY

ROYAL V. SHERMAN, M.D.
Red Wing, Minnesota

IT IS well now and then to take stock of what we can expect, and hope for, in the treatment of coronary emergencies. In the last few years tremendous advances have been made in this field, and conditions which were long thought to be beyond relief are now being treated with many encouraging results. Our interest in this disease has further been enhanced due to the increase in its frequency, an increase which has both been apparent and real, due partly to the greater frequency of the diagnosis and also to an absolute increase in the occurrence of the disease. With the added prevalence of the disease, emergency situations in coronary artery disease have assumed a role of major importance to all practitioners of medicine as well as to cardiologists.

Acute coronary artery disease has been divided by Masters, Jaffe, Dack and Grishman into "angina pectoris" or angina of effort, acute coronary insufficiency and coronary occlusion.[28] Coronary occlusion means sudden complete obstruction of a coronary artery, and may occur as a consequence of any of the following circumstances:[12] (1) thrombosis of a narrowed arteriosclerotic coronary vessel; (2) intramural hemorrhage in a coronary vessel producing closure, and (3) rupture of a subintimal lipoid abscess with plugging of the lumen. Acute coronary insufficiency, on the other hand, indicates necrosis or infarction of the myocardium without complete closure of a coronary artery. Pain and necrosis of the myocardium occurring as a result of severe or prolonged diminution in coronary flow without actual coronary closure is now an accepted fact. Angina of effort or "angina pectoris" represents a temporary insufficiency of the coronary flow, and differs from the more severe forms of coronary insufficiency and occlusion in that anatomic alterations do not occur in the cardiac muscle.

Any discussion of the management of the sudden attack would be incomplete without emphasizing the great importance of prompt and accurate recognition of the condition. Proper treatment presupposes accurate diagnosis. The occurrence of precordial pain in a patient places a responsibility on the physician to utilize every means at his disposal to determine carefully the cause of the pain and the extent of cardiac damage. The diagnosis of coronary artery disease, by and large, can be made with a high degree of accuracy and the nature and extent of the therapy should be governed by careful consideration of pertinent diagnostic facts.

Angina of Effort.—In the patients the classical picture includes the substernal pain with its radiation, its relation to effort, excitement, cold and eating. It is relieved by the short-acting nitrates and rest. Nitroglycerine can be used for the acute episodes, and aminophylline, theobromine, whiskey and other vasodilators can be given in an attempt to prevent more prolonged and continuous vasoconstriction. Much can be accomplished in these patients in re-education as to their activities, slowing down the speed of doing things, care about undue exertion, particularly in cold weather and after meals. Some patients will require medicinal aid in the way of sedatives as barbiturates or bromides to accomplish the slowing down. In that event, one should keep in mind the dangers of intoxications from these drugs. Lately such things as trichlorethylene, testosterone, nicotinic acid, and more recently cobra venom have been suggested as useful in the relief or prevention of anginal pain.[15,26,32] Their use, however, has not as yet been generally accepted and can be considered no more than experimental.

Myocardial Infarction. In these cases the clinical picture of prolonged pain, shock, gallop rhythm, impairment of the first heart sound, occasionally a precordial rub, a fall in blood pressure, fever, leukocytosis, and a rapid sedimentation rate, is well recognized. In treatment, the patient should be placed at absolute rest, and all the disturbing procedures that are not absolutely necessary are to be avoided. Sufficient amounts of morphine or other derivatives of opium should be given to assure relief of pain. The administration of morphine or papaverine hydrochloride by vein is often justified that the relief may be

Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

more prompt and complete. A procedure as suggested by Falk is that papaverine be given intravenously in doses of from ½ to 1 grain (0.03 to 0.06 gram). If the pain is not relieved, this can be followed with the slow and careful intravenous injections of 1/6 to ¼ grain (0.01 to 0.016 gram) of morphine diluted with 2 c.c. of sterile water.[12] When pulmonary congestion and cyanosis is present, continuous oxygen therapy should be instituted; such administration of oxygen frequently aids both the cyanosis and intractable pain.

If shock is present additional measures are often necessary to overcome profound collapse. Small doses of epinephrin and caffein are often helpful. One should remember, however, that epinephrin in large doses is a coronary constrictor and care must be exercised in its use. In severe collapse and dehydration the slow administration of small quantities of glucose by vein may be indicated. Smith suggests that the administration of 200 to 300 c.c. of hypertonic glucose to which 3¾ grains of aminophylline have been added is effective in alleviating shock and combating dyspnea.[31]

Manning, McEachern and Hall[27], as well as LeRoy and associates[20,21], working on dogs, have shown that occlusion of a coronary artery is often followed by a reflex spasm of the collateral coronary vessels. This spasm seems to arise through a nerve reflex in which the cardiosensory innervation is the afferent and the vagus the efferent pathway. Their experiments further suggest that this regional spasm produces an area of anoxemia and resultant infarction appreciably larger than that to be expected from necrosis of the muscle mass supplied by the particular vessel itself. According to LeRoy, this regional spasm also seemed to be the factor that produced ventricular fibrillation in susceptible individuals. Several observers who have been taking electrocardiograms at the moment of death have reported ventricular fibrillation as the terminal event.[33] Several drugs have been suggested for use in an attempt to limit regional vasoconstriction and prevent ventricular fibrillation. Lindner and Katz suggest the use of papaverine hydrochloride.[25] Their work showed that this opium alkaloid is not only a powerful coronary dilator, but also seems to prevent the occurrence of ventricular fibrillation in animals. LeRoy and his associates have shown that the administration of atropine in dogs in which the circumflex branch of the left coronary artery was ligated greatly reduced the mortality in these animals.[20,21] In a large group of animals the mortality after coronary ligation was 75 per cent, but when atropine was given intravenously the mortality after ligation was reduced to 35 per cent; when atropine sulfate and aminophylline were given together the mortality was only 33 per cent, and when aminophylline was given alone, the mortality was 56 per cent.

The effect of the xanthine preparations, such as aminophylline, theophylline and others have been the subject of variable reports. Fowler, Hurevitz and Smith reported that after ligation of the coronary arteries in dogs, the administration of aminophylline lessened the size of the resulting infarct and hastened its healing.[13] Gold, in similar circumstances, found no effect.[17] The use of the xanthines as a routine measure in myocardial infarction is a debatable question. In those instances in which there is a complicating congestive failure, administration of aminophylline is beneficial.

Further, Borg observed that quinidine sulfate used in patients with degenerative heart disease greatly reduced the incidence of sudden death.[8] Several writers have advocated its use prophylactically in cases of myocardial infarction to prevent ventricular fibrillation.[12,32] Quinidine is also useful both early and late in the attack for its tendency to prevent and control other forms of cardiac arrhythmia such as ventricular tachycardia and auricular fibrillation. Quinidine, however, is contraindicated in the presence of conduction defects.

Among the causes of sudden death, whether in the early period of coronary attack or during the period of recovery, in addition to ventricular fibrillation are such things as myocardial failure and pulmonary embolism. Woods and Barnes have pointed out that pulmonary embolism is not an infrequent cause of death in those dying after coronary infarction.[35] In these instances, the embolus originates from a thrombus which arises in the iliac veins. After coronary infarction, conditions are favorable for the development of such iliac thrombosis due to the lowered blood pressure and prolonged periods of bed rest. For this reason it would seem advisable in an attempt to prevent pulmonary embolism, to institute such measures as deep breathing and passive

movements of the legs as early as reasonable, considering the condition of the patient.

As a preventative of thrombolic and embolic complications, the use of the anticoagulants may prove beneficial in cases of myocardial infarction. Although it has been shown that the anticoagulants, heparin and dicoumarol, can prevent intravascular thrombosis, the infrequency of premonitory signs precludes any important use of these drugs in the prophylaxis of thrombosis of the coronary arteries. Cotlove and Vorzimer recommend the use of dicourmarol in patients developing myocardial infarction of a severe degree in order to prevent mural thrombus formation, which in turn may result in embolism.[10] The drug should be used only where facilities for doing accurate prothrombin time daily are available. Proper evaluation of this procedure will depend on more experience than has been reported to date.

Another cause of death is myocardial failure, which is often accompanied by pulmonary edema and occasionally hepatic congestion. Indicated in the management of this complication are digitalis, adequate oxygen therapy and diuretics such as xanthine. Digitalis should never be used early in coronary occlusion, as it is thought to increase the danger of cardiac rupture during the period that the infarct remains soft. Mercurial diuretics should be used only after very careful consideration and evaluation of the risk attendant on rapid mobilization of fluids, which increases the load placed upon the heart.

The general nursing care of the patient is very important. Everything possible should be done to keep him comfortable. In this regard, it should be emphasized that the attitude of the physician and nurses should be such as to allay and not create anxiety. The diet should at first be liquid, and later low in calories and easily digested. Bed rest is imperative, and should be continued four to six weeks. During the acute phase of the attack the patient should be fed, and turned in bed by the nurse. Gradually the activity is increased through passive, then active movements in bed, sitting up in bed, and walking. Five or six months usually are necessary before the patient is allowed to go back to work. The period of convalescent care will be used as a period of re-education, so that the patient may learn how to live under the limitations of his condition.

Summary and Conclusions

Acute coronary emergencies have been divided into (1) angina of effort; (2) acute coronary insufficiency; and (3) coronary occlusion.

The therapy of the acute attacks should take into account (1) the prompt relief of pain and anxiety; (2) the control or shock; (3) the problem of vasodilatation in an effort to limit the regional vasoconstriction and the occurrence of ventricular fibrillations; and (4) the problem of preventing complications during the period of recovery.

Various therapeutic agents and procedures directed at accomplishing these ends have been suggested.

Bibliography

1. Allen, E. V.: Sudden occlusions of the arteries of the extremities. Proc. Staff Meet., Mayo Clin., 10:678, (Oct. 23) 1935.
2. Askey, J. M.: Quinidine in the treatment of auricular fibrillation in association with congestive failure. Ann. Int. Med., 24:371-383, (Mar.) 1946.
3. Barach, A. L., and Levy, R. L.: Oxygen in treatment of acute coronary occlusion. J.A.M.A., 103:1690-1693, (Dec. 1) 1934.
4. Beck, C. S.: Principles underlying operative approach to treatment of myocardial ischemia. Ann. Surg., 118:788-806, (Nov.) 1943.
5. Blumer, G.: The importance of embolism as a complication of cardiac infarction. Ann. Int. Med., 11:499-504, 1937.
6. Boothby, W. M.: Oxygen administration: value of high concentrations for therapy. Proc. Staff Meet., Mayo Clin., 13:641-646, (Oct. 12) 1938.
7. Boothby, W. M., Mayo, C. W., and Lovelace, W. R., Jr.: One hundred per cent oxygen: indications for its use and methods of its administration. J.A.M.A., 113:477-482, (Aug. 5) 1939.
8. Borg, J. F.: Ventricular fibrillation causing sudden death. Tr. Am. Therap. Soc., 39:115, 1939.
9. Brown, M. G., and Riseman, J. E. F: The value of purine derivatives in the treatment of angina pectoris J.A.M.A., 109:256-258, (July 24) 1937.
10. Cotlove, E., and Vorzimer, J. J.: Serial prothrombin estimations in cardiac patients: diagnostic and therapeutic implications; use of dicoumarol. Ann. Int. Med., 24:648-665, (April) 1946.
11. Essex, H. E.; Herrick, J. F.; Mann, F. C., and Baldes, E. J.: Effect of atropine on coronary blood flow of trained dogs with denervated and partially denervated hearts. Am. J. Physiol., 138:683-686, (Mar.) 1943.
12. Falk, O. P. J.: The causes and prevention of sudden death in coronary disease. J.A.M.A., 119:1250-1252, (Aug. 15) 1942
13. Fowler, W. M.; Hurevitz, H. M., and Smith, F. M.: Effect of theophylline with ethylenediamine on experimentally induced cardiac infarction in the dog. Arch. Int. Med., 56:1242, (Dec.) 1935.
14. Gilber, N. C., and Fenn, G. K.: The effect of purine base diuretics on coronary flow. Arch. Int. Med., 44:118-127, (July) 1929.
15. Gold, H.: Drug therapy in coronary disease. J.A.M.A., 112:1-6, (Jan. 7) 1939.
16. Gold, H.; Kwit, N. T., and Otto, H.: The xanthenes (theobromine and animophylline) in the treatment of cardiac pain. J.A.M.A., 108:2173-2179, (June 26) 1937.
17. Gold, H.; Travell, J., and Modell, W.: The effect of theophylline with ethylenediamine (aminophylline) on the course of cardiac infarction following experimental coronary occlusions. Am. Heart J., 14:284, (Sept.) 1937.
18. Hines, F. E., and Hunt, J. T.: Pulmonary infarction in heart disease Am. Int. Med., 15:644-647, (Oct.) 1941.
19. LeRoy, G. V.: The effectiveness of xanthine drugs in the treatment of angina pectoris. J.A.M.A., 116:921-925, (Mar. 8) 1941.
20. LeRoy, G. V.; Fenn, G. K., and Gilber, N. C.: The influence of xanthine drugs and atropine on mortality rate after experimental occlusion of coronary artery. Am. Heart J., 23:637-643, (May) 1942.
21. LeRoy, G. V., and Snider, S. S.: Sudden death of patients with few symptoms of heart disease. J.A.M.A., 117:2019, (Dec 13) 1941.
22. Levine, S. A., and Fulton, M. N.: The effect of quinidine sulfate in ventricular tachycardia. J.A.M.A., 92:1162, (April 6) 1929.

(Continued on Page 897)

THE OUTLOOK FOR POSTWAR MEDICINE AS SEEN BY A RADIOLOGIST

B. R. KIRKLIN, M.D.

Rochester, Minnesota

NEXT month will mark the twentieth anniversary of Russell Carman's passing. In that double decade many other men of high estate, among them Carman's distinguished patrons, the Mayos, have gone to join him. World-shaking events have occurred, for good or ill. The bloodiest and bitterest war of all time has been fought—a war that was ended by the atomic bomb, a lineal descendant of the rays with which Carman worked. Carman, American pioneer in the radiology of the digestive tract, American protagonist of screen examination of the alimentary canal, planned a practical and highly efficient technique, applied it with consummate skill and taught it to his pupils and fellow radiologists by precept and example. He was first to observe and record the signs of gastrojejunual ulcer. He knew the telltale tokens of peptic ulcer and gastric cancer as well as the most expert among us today—and he knew them twenty years ago.

As time rolls on and landmarks of the past fade into the distance, the radiologic world may forget the name of Carman, but it will always profit by what he did, for his work is now built into the foundation and frame of gastro-intestinal radiology. That is his monument—one that will endure even longer than the granite block that stands in silent respect before his tomb.

Although it was originally intended that the Russell D. Carman Memorial Lecture should deal with some phase of radiologic diagnosis, I thought you might prefer to join with me in considering the condition in which medicine has been left by the war and in trying to determine what lies ahead for our profession. It is not likely that we shall arrive at many settled conclusions but a little exercise of our foresight may strengthen that faculty and enable it to see farther and better at its next trial.

From history and experience we know full well that war brings vast political, social and economic changes during the conflict and after it has ceased. In peace, the state progresses slowly and without clear design. In war, the metabolism of the nation becomes accelerated and plainly purposeful; the genius of invention and improvement is stimulated and rapid advances are made under the stress of urgent need. At war's end, many of these advances are retained, expanded and adapted to peacetime use, and progress takes a long leap forward, although the process of adjustment inevitably raises new and puzzling problems. That sequence of events, affecting all our domestic activities, including the practice of medicine, is now in motion and the results may be momentous. So today I wish to cite certain facts, offer a few opinions and perhaps venture some mere guesses concerning salient aspects of the afterwar medical service that is now beginning to take shape. It is not my intention to give you unneeded instruction by forensic gavage; I hope only to think with you constructively about these matters, for most of them vitally affect the welfare of the public and ourselves.

That the quality of postwar medicine will surpass that of prewar days is certain and many reasons for the improvement are obvious. During the war chemotherapy made remarkable advances. Penicillin made its appearance, proved its extraordinary worth and directed attention to the therapeutic possibilities of other antibiotic agents. Preventive medicine made vast gains from the discovery of potent insecticides. New surgical techniques were devised and old ones improved. In plastic surgery, neurosurgery, and other fields of endeavor, notable progress was made. New instruments and appliances were invented. Virtually all branches of medicine made marked gains directly from the war or during it. Much of the progress, of course, was a natural resultant of long-existing forces, but the war hastened the advance.

Returning veterans of the medical corps are an important factor in assuring a superior quality of civil medical practice. They are coming home with new skills, new confidence in the power of their art and new zeal to help mankind. They are coming back with a firm determination to give service at home equal to, or better than, that which they gave to the armed forces—a service unexcelled by any ever given in war.

Russell D. Carman Memorial Lecture presented before the Minnesota State Medical Association, St. Paul, Minnesota, May 20, 1946.

From the Section on Roentgenology, Mayo Clinic, Rochester, Minnesota.

These medical veterans saw and experienced the very great advantage of working with representatives of the various specialties in the military hospitals. Many medical officers had been certified by one or another of the specialty boards. Others had been graduate students who had not completed their special courses but nevertheless were assigned to military duties in the branches in which they had been under instruction. Still others who merely showed an aptitude for, or a keen interest in, a certain field of medicine were given intensive courses of instruction in order to fit them for duty as assistants in that field. For example, the army, when faced with a serious shortage of radiologists, expanded the Army School of Roentgenology, originally located at Washington and later moved to Memphis, at which selected men were given preliminary training and then sent to the advanced school of military roentgenology here in Minnesota to complete their short courses. Incidentally, I may say here that as Chief Consultant in Radiology to the Surgeon General of the Army, I saw many of these brevet radiologists on duty in army hospitals, and almost without exception, they were doing excellent work. The army also established short, intensive courses in neurosurgery, anesthesiology, orthopedic surgery, neuropsychiatry and other fields, with similar success.

The efficiency resulting from specialization in the military medical services has made a deep impression on the returning medical officers, and a surprisingly large number of those not already fully qualified have avowed their intention to seek graduate training in order to fit themselves thoroughly for practice in their chosen specialties and to obtain certification by the appropriate specialty boards. This should go far toward allaying any apprehension that the aftermath of the first World War will be repeated and that there will be an influx of self-proclaimed but poorly trained specialists. In this connection I can state positively that The American Board of Radiology will not give its certificate to any applicant who cannot fully prove his competence. Time spent in military service will be considered in adjusting fulfillment of preliminary training requirements, but the candidate's knowledge nevertheless will be tested by the standard examination. Although I cannot pledge other specialty boards, I have no doubt that they will follow a similar course.

The rapid and vast expansion of specialization in recent times has been a striking and significant factor in the practice and progress of medicine. Since specialization represents division of labor, with concentration of effort in a limited field, it must be accepted as a natural and progressive step in the evolution of medical science and art. It was partly responsible for the great advance of American medicine just before the war. It was the basis on which the war medical services were organized and a prime reason for their efficiency. It has profoundly affected medical education and the quality, interrelations and distribution of medical service. And, because of its fast growth and far-reaching effects, specialization has produced new problems that require solution.

Twenty years ago, in Carman's day, there existed only two specialty boards; namely, The American Board of Ophthalmology (1916) and The American Board of Otolaryngology (1924). Few institutions offered systematic resident training. Radiology had not achieved full recognition and it was not until 1934, only twelve years ago, that The American Board of Radiology was formed. In that same year the Advisory Board for Medical Specialties, composed of representatives from the seven existing special boards and from organizations interested in graduate medical education, was organized, and orderly progress was established. Today there are fifteen specialty boards and an abundance of excellent facilities for graduate training. At present, more than 200 institutions have been approved for one to three years of residency training in radiology alone and there are more than 2,000 diplomates of the board. These facts and figures probably are fairly typical of, or at least not far from the average for, all specialties and they help to explain the great influence of specialization in medicine. While that influence has been highly beneficial as a whole, it also has disturbed temporarily the internal relations of the medical organism and thus has given rise to new complications.

Among disturbed relations to which specialization has contributed materially, the very considerable reduction in the proportion of general practitioners to specialists is of first importance. For example, Dr. William A. O'Brien is authority for the statement that of 250 new medical graduates recently interviewed, only one expected to enter general practice. To physicians that situation is,

of course, not altogether surprising, for they know that the life of the average general practitioner is not enviable, especially in the rural communities where his services are most urgently needed. And yet no one who has thought about it at all can fail to realize that the general practitioner is the basic unit of the profession and indispensable as the first physician whom the civilian should consult and often the only one whom he need consult. Hospitals may never completely take the place of homes as refuges in time of illness and neither specialist nor group probably ever will be a satisfactory substitute for the family doctor.

Measures designed to make general practice more inviting include the proposal that it be given the status of a specialty, with requirements similar to those of other specialties. This would be fitting recognition of the manifold skills required of the general practitioner, who is expected to have a working knowledge of every branch of medicine. At its last meeting, the House of Delegates of the American Medical Association again recognized the importance of the general practitioner by creating a Section on General Practice and this may well be the first step toward the desired end. Better to prepare the young medical graduate for general practice, and to meet standards similar to those prescribed by existing specialties, it has been suggested that a prolonged rotating internship be required, together with a well-planned graduate course that would offer intensive training in essential fields. Thus, the general practitioner would learn the judicious use of special diagnostic and therapeutic aids and would be enabled to cultivate his domain more satisfactorily than he is now able to do. However, other and stronger measures will be required to increase the supply of general practitioners sufficiently to meet the demand.

Besides augmenting the shortage of general practitioners, the war has caused an absolute diminution of the total number of physicians available for peacetime service. During the war the armed forces obtained, almost exclusively by voluntary enlistment, approximately a third of the nation's physicians, including not only active practitioners but many graduate students. Medical students who clearly showed their competence were exempted from the draft but those who were unsuccessful in demonstrating their ability were inducted into active service. Premedical students were inducted unsparingly and thus, for four years, the primary reservoir from which the profession is recruited was greatly depleted. Now that the war has ended, thousands of physicians —perhaps two thirds of those who were in the armed forces—have been returned to civil life and hundreds of discharged medical and premedical students are now, or soon will be, in school as beneficiaries of the so-called GI Bill of Rights. On the other hand, a large number of medical officers will be retained in our greatly expanded peacetime army and navy; a large proportion of those discharged are taking refresher and graduate medical courses, mostly with the aim of becoming specialists; beginning premedical students have at least seven years of preparation ahead of them and selective service may continue to decimate the ranks of high school graduates who are planning to study medicine. The whole picture is so complex that it defies precise analysis but it is clear that for a time there will be a shortage of physicians. It is fairly certain, also, that the scarcity will be accentuated by an increased demand for medical service, for the population has increased substantially, the health consciousness of the public is constantly being stimulated by press and radio, and the people are more able than ever to pay for extraordinary, even luxurious, medical attention.

However, the mere number of physicians in practice is not a decisive index of the amount of medical service available to the public, for there are important modifying factors, such as the number and distribution of hospitals and medical centers, and the character and distribution of transportation and communication in localities concerned. Not all persons concerned fully realize that hospitals, besides offering comfort to the ill and injured, and convenience to physicians, also play a notable part in the economy and efficiency of medical care in the areas tributary to the individual hospitals. In much the same way that industrial plants make mass production possible, hospitals facilitate mass handling of patients and thus save time and effort of all physicians concerned, a significant consideration wherever there is a scarcity of medical personnel. Almost every hospital has special diagnostic services—in radiology and laboratory facilities, for example—and thus becomes a diagnostic center for the entire vicinity. This service is appreciated by physicians who do not have the equipment requisite

for making special tests or the time or training necessary to make them. All the beneficial functions of hospitals have been enhanced in recent years by modern methods of transportation and communication, so that patients or specimens can be sent easily from outlying districts and any desired information can be returned quickly to the attending physician, thus adding to his efficiency and satisfaction.

Public interest in hospitals has been heightened by the war, and it is planned to build many of them. They are sponsored by churches, medical schools, associations of physicians and philanthropic organizations, not only in the large cities but also in towns and more scattered communities. (In many instances municipal aid will be forthcoming.) The extension of hospital facilities into regions where they were lacking before will be a boon to patients, will help to ease the burden of the general practitioner and will conserve medical man power. A bill now pending in congress would foster the building of hospitals by giving subsidies to them. The government has given subsidies for less noble purposes and a grant for hospitals can hardly be regarded as objectionable if it will be truly free and furnish no excuse for future governmental interference in administration of the institutions.

Associations of physicians, which is a logical outgrowth of specialization and has considerable influence on medical economy, was given impetus by the war. Many discharged medical officers, impressed by the efficiency of military hospitals organized on that basis, are no doubt planning to affiliate with an existing association at the first opportunity or help form a new one. Consequently, it may be anticipated that many new associations of physicians will be formed, not only in populous centers but also in areas where individual practitioners have found it difficult to furnish the character and amount of service needed.

Between the first and second world wars, medical education, both undergraduate and graduate, attained such excellence that on Pearl Harbor Day a great mass of remarkably well-trained physicians was at the disposal of the military forces. Then began a progressive deterioration of the entire educational system. Among factors responsible were the loss of teachers to the military forces, gradual reduction in the number of students, the forced adoption of the so-called accelerated program, by which schools and students were kept in continuous session, and the shortening of internships to a maximum of nine months. Graduate education suffered severely from the sharp reduction in the number of students and the establishment of quotas, with the requirement that, as far as possible, the quotas be filled with women, and with men physically unfit for military duty, regardless of mental capacity in either case. Many promising students were thus denied graduate training or were granted only a short period of instruction before being called into service. On the date of victory in Europe, medical education had reached its nadir for the period of the emergency.

A little later, with the unexpectedly early collapse of the enemy, the trend was suddenly reversed, essential teachers were released and forced and rapid demobilization brought back a flood of students—graduate, undergraduate and premedical—who returned to their classes and overwhelmed the weakened and unprepared institutions of medical instruction. The overcrowding and confusion are continuing with little abatement, especially in the graduate training centers, and the planned discharge by September of graduate students who were inducted into the navy only six months before will add to the disorder.

In view of the widespread belief that the nation inevitably will be involved again in war, we should begin now to prepare for the next one in order to render the greatest possible assistance to the war effort and to avoid a repetition of injuries suffered unnecessarily by medicine in the war now ending. The surgeons general of both armed services repeatedly have affirmed publicly that the greatly augmented need for professional medical service of the army and navy was met by former civilian physicians, while the physicians of the regular medical corps necessarily were assigned to administrative duties with which only regular officers could be familiar. As potential military officers in future wars, we are therefore warranted in taking an active part in military medical planning.

First of all, we should aid the army and navy in peacetime training of their respective medical corps. Programs have been arranged for special resident training of medical officers in suitable military hospitals and, in order to meet requirements of the various specialty boards, our assistance has been requested. Second, we should

insist on unification of all military medical services, including those of the army, navy, air forces and all special forces. It is imperative that a single authority, a physician on the general staff level, have the power to shift medical personnel from one branch of military service to another. This would prevent hoarding of skilled specialists in any one service as was done in the present war. It also would eliminate duplication of hospitals and medical personnel and would leave a great number of physicians at home for civilian practice. Third, physicians should alternate in civilian and military duty during war so that all the hardships, whether they be at home or in military service, will not fall on one group. Fourth, depletion of medical faculties and student rolls should not be permitted unless the nation is in extreme danger.

If American medicine could feel assured of the freedom it has always had, it would march briskly on to new heights of achievement and service. But it hesitates for it already has lost its freedom from fear. Fighting medicine and the fighting men it served are coming home, expecting to find the self-reliant, independent, fearless people they left behind. It is true that through the years of depression the weak, defeated and hopeless had looked more and more to government, at first for bread, then for everything, and government had generously increased its bounty—and its authority. But there had been little alarm—all that paternal care would pass with the return of better times. Now medicine and its comrades in arms are astounded to find the home folks confused and fearful, pushed around by insolent and selfish groups, regimented by government and almost resigned to prospective totalitarian rule. Collectivism has crossed the Atlantic from decadent Europe and is marching roughshod over the land of the free.

In this situation, the political philanthropists see a splendid opportunity to attempt the socialization of medicine, and the Wagner-Murray-Dingell Bill, now pending in congress, is the first great step in that direction. The bill is so cleverly drawn that it seems almost harmless; we are well aware, nevertheless, that its passage would mark the beginning of state-controlled medicine. Despite all claims to the contrary, any physician acting under the provisions of this measure would become the agent of a government bureau; he would be paid by the government and primarily would be responsible to it rather than to his patients. Stronger controls would soon follow, with disastrous deterioration of medical service. Even though we shall be charged with having only selfish motives, we must continue to warn the public of its danger. To paraphrase Winston Churchill's comment on English socialism, the American people under free and democratic medicine have shared somewhat unequally in the best medical service in the world; under socialized medicine they would share equally in the worst. Choice of one or the other rests with the people.

THE TREATMENT OF THE CORONARY EMERGENCY

(Continued from Page 892)

23. Levy, R. L.: Management of patient who has recovered from acute occlusion. Bull. New York Acad. Med., 19:273-290, (April) 1943.
24. Levy, R. L., and Barauch, A. L.: The therapeutic use of oxygen in coronary thrombosis. J.A.M.A., 94:1363, (May 3) 1930.
25. Lindner, E., and Katz, L. N.: Papaverine hydrochloride and ventricular fibrillation. Am. J. Physiol., 133:155-160, (May) 1941.
26. Love, W. S.: Effectiveness of trichlorethylene in preventing attacks of angina pectoris. J. Lab. & Clin. Med., 24:380-391, (Jan.) 1939.
27. Manning, G. W.; McEachern, C. G., and Hall, G. E.: Reflex coronary artery spasm following sudden occlusion of other coronary branches. Arch. Int. Med., 64:661-674, (Oct.) 1939.
28. Masters, A. M.; Jaffe, H. L.; Dack, S., and Grishman, A.: Coronary occlusion, coronary insufficiency, and angina pectoris. Am. Heart J., 27:803-816, 1944.
29. Middleton, H. N.: Electrocardiographic diagnosis and treatment in recent occlusion. J. Indiana, M. A., 36:64-68, (Feb.) 1943.
30. Roland, E. W.: Oxygen in high concentrations for relief of pain in coronary thrombosis and severe angina pectoris. J.A.M.A., 114:1512, (Apr. 20) 1940.
31. Smith, H. L.: Treatment and management of coronary disease. Proc. Staff Meet., Mayo Clin., 17:307-309, (May 20) 1942.
32. Stewart, H. J.: What can be accomplished in the treatment of heart disease. Ann. Int. Med., 24:80-93, (Jan.) 1946.
33. Thompson, I.: Ventricular fibrillation causing sudden death. J.A.M.A., 116:2583-2585, (June 7) 1941.
34. Willius, F. A.: Coronary disease, certain significant contributions made during the last quarter century. Minnesota Med., 26:33-40, (Jan.) 1943.
35. Woods, R. M., and Barnes, A. R.: Factors influencing immediate mortality rate following acute coronary occlusion. Proc. Staff Meet., Mayo Clin., 16:341-345, (May 28) 1941.

SURGICAL TREATMENT OF BRONCHIECTASIS

THOMAS J. KINSELLA, M.D.
Minneapolis, Minnesota

BRONCHIECTASIS is a condition, not a disease, as it may result not from a single but from a wide variety of causes. The term means dilatation of the bronchus and has been recognized in its advanced stages with a loose, rattling cough, and profuse foul expectoration for many years. The past two to three decades, with the development and wider application of bronchoscopy and bronchography, have taught us much about this condition particularly in its earlier stages and have brought about the realization that much in a palliative and even more in a curative way can be done for this very distressing and often times unsocial condition.

Clinically, bronchiectasis presents a varied picture from that of a chronic or recurrent bronchitis, usually considered nothing more than a chronic cough, to the very advanced full-blown picture with a very profuse foul or bloody expectoration, with cyanosis, clubbing of the fingers and so forth so well recognized by everyone. Early, recurrent colds with cough and expectoration a little more profuse and of slightly longer duration than usual may be the only clue to suggest that actual lung damage has occurred. Perhaps there is a history of pneumonia or atelectasis in infancy or childhood, or perhaps a foreign body previously removed, or even a severe attack of measles or pertussis, but often there is nothing to suggest a more serious condition.

Later more profuse or persistent cough and expectoration of pinkish sputum or free to exsanguinating pulmonary hemorrhage may occur. Recurrent episodes of fever or localized slowly clearing pneumonitis may follow with pleurisy or even empyema of a putrid type. Clubbing of the fingers and watch-crystal nails, usually not seen early, may develop later without the patient's knowledge. The sputum may become foul or putrid as larger amounts are produced and stasis ensues. Chronic cyanosis, dyspnea, metastatic abscesses and other complications may ensue, and the patient's health, previously unimpaired, may begin to fail.

Pathologically the picture also varies widely. Early in the process there may be only slight cylindrical bronchial dilatation without much peribronchial infiltration or fibrosis. Later there are the findings of a chronic bronchitis of severe degree with peribronchitis and destruction of the bronchial musculature and even the cartilage. The bronchi not only become dilated, but the mucous membrane becomes so hypertrophied and thrown into folds, as to almost suggest polypoid formation. Atelectasis of varying degrees may also be present, until in some the lung may be shrunken to only a third or a quarter its normal volume. Secondary abscesses may develop distal to strictured areas in the bronchi, or the bronchi throughout the involved lobes of the lung may be dilated to the point where they resemble abscesses in themselves. The whole lobe or entire lung may eventually lose all gross semblance of pulmonary structure, being represented only by clusters of dilated, pus-filled bronchi surrounded by walls of dense indurated fibrous tissue.

The clinical recognition of the advanced stages of bronchiectasis is an easy matter. It is not so, however, with the earlier stages unless the clinician continually keeps the possibility of its occurrence in mind. Its discovery or recognition may adequately explain a number of otherwise obscure conditions, such as recurrent colds, recurrent pneumonias, the cough which hangs on, chest discomfort or tightness, pleuritic change, wheezing in the chest, or occasional frank pulmonary hemorrhage. A search for this conditon should be made in any chronic condition of the chest not readily explained otherwise.

Physical examination of the chest, even in advanced bronchiectasis without atelectasis, may be very deceiving as the physical findings may be scant or altogether absent. A localized area of râles, an inconstant rhonchus or slight percussion note changes may be the only findings, and even these may be absent. In the presence of atelectasis of a lobe or a portion of a lobe, more physical findings are present, but even with it the significance of the local findings is frequently overlooked. A very local area of percussion note change with distant breath sounds, slight elevation of the diaphragm, or slight cardiac displacement,

Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 21, 1946.

may be the only clue to a completely atelectatic left lower lobe.

The x-ray examination may reveal little of note except slight elevation of the left diaphragm, slight shifting of the cardiac shadow to the left, or slight increased radiability of the left lung field, all of which may be easily overlooked. Once the condition is suspected, however, its demonstration is a relatively easy matter. Bronchoscopy may reveal a distortion of the bronchial tree, narrowing of a bronchus, a localized source of secretion, or a localized tumor or foreign body. Careful bronchography, mapping the major divisions of all lobes should be made in order to know the exact extent and character of the bronchiectatic process, for unless the exact extent and type of involvement is known no accurate decision as to the possibilities of surgical treatment can be made.

From the standpoint of treatment, a number of things can be done which may alleviate the patient's symptoms and give him at least temporary relief. The use of bed rest and symptomatic treatment early in a cold may reduce or eliminate persistent symptoms. Steam and expectorants may also be of considerable help. Chemotherapy, if susceptible organisms are present, undoubtely alters the course of individual attacks. Nebulized solutions of penicillin, streptomycin or other chemotherapeutic agents may greatly reduce the amount of cough and expectoration if susceptible organisms are present, but do not alter the underlying pathological process. Treatment of sinus disease and proper instructions as to avoiding colds, chilling and exposure, may help materially. Change of climate may be of value, particularly if it brings about reduction of the number of colds and respiratory infections.

Postural drainage may be of distinct value in removing secretion and reducing cough and perhaps, by promoting adequate drainage, eliminating sputum odor, but it must be used intelligently and in proper position or it will not give results. Bronchoscopy with dilatation of stricture, removal of foreign body, granulation tissue, or even benign tumor may facilitate drainage and thereby improve the symptoms, but if prompt results are not obtained it is folly to keep it up indefinitely. The injection of iodized oil for bronchograms may be followed by a rather marked improvement in symptoms, and if so may be repeated at regular intervals as a therapeutic measure.

Collapse of the involved portions of the lungs by artificial pneumothorax, diaphragmatic paralysis or even thoracoplasty may alter symptoms considerably and may be of value in temporarily controlling pulmonary hemorrhage. None of them, however, cure the condition and all may even aggravate the symptoms by interfering with drainage. The possibility of pleural complications, particularly in pneumothorax used in the treatment of this process, must always be borne in mind. X-ray therapy has brought about considerable symptomatic improvement in some patients with profuse expectoration, but it does not eliminate the original condition, and repeated use may bring about lung changes which are undesirable. All of the methods heretofore mentioned leave the diseased lung tissue in the body where recurrence, reactivation and even spread of the condition is to be expected.

The possibilities of surgical treatment for this condition have gradually been brought to light, and with improvement in surgical technique, in anesthesia and in chemotherapy, the potential risk of such treatment has now been reduced to the point where surgical attack on the less extensive stages of bronchiectasis have become amply justified. The possibilities of this type of treatment are not as widely known to the profession at large as the results accomplished would seem to warrant.

A brief consideration of the field for surgery in bronchiectasis may not be amiss. First of all a diagnosis of bronchiectasis does not mean that surgery is indicated, for many patients with bronchiectasis are altogether unsuited for surgical attack, and many others have bronchiectatic changes of such slight degree that surgical intervention is not warranted. Surgical treatment does not restore the lung to a normal functioning capacity, but rather removes the involved portion of the lung, often with a sacrifice of considerable good functioning lung tissue. Conditions within the thoracic cage never return entirely to normal after surgical attack. Serious thought must be given to all factors involved before undertaking such a procedure, and the pulmonary involvement and the disability therefrom must justify the surgical sacrifice.

There is much confusion as to the rate of progression of bronchiectasis and the longevity of patients afflicted with it, built upon figures obtained from studies of patients with advanced trouble and before the days of intensive chemotherapy, but the application of such figures to

the earlier stages of the condition in this chemotherapeutic age are absolutely unjustified. By this statement we do not mean to minimize the seriousness of the process nor to deny that patients die from hemorrhage, from metastatic abscess, or during attacks of recurrent pneumonitis, but merely to point out that these serious complications are more frequent in advanced bronchiectasis and that the condition itself is a chronic one which need not be progressive and with which many patients may live in relatively good health for long periods of time. That it does progress is well known, but the rate of this progression may be very slow. That it is a distressing and disagreeable condition is also well known, and for those who are suitable we regularly recommend surgical intervention, but we do wish to point out that the diagnosis of bronchiectasis does not necessarily mean surgical operation, and that in the present state of our knowledge we are not justified in recommending surgical excision for the minor degrees of bronchiectatic change.

For the surgical treatment of bronchiectasis we have available three general procedures, total pneumonectomy for the removal of a completely involved lung, lobectomy for the excision of an involved lobe or lobes, and segmental resection or partial lobectomy for the excision of involved portions of lobes in an attempt to preserve all possible healthy lung tissue. The tendency of the disease to extend slowly from one lobe to an adjacent portion of the next lobe is well known, and it is frequently necessary to resect the left lower lobe and the adjacent lingular portion of the upper lobe for such involvement on the left side, or the lower lobe and the middle lobe on the right.

Bilateral excisions are perfectly feasible in young patients but are not well tolerated by older individuals in whom the lung has lost some of its elasticity and ability to overexpand and in whom emphysema and previous disease have reduced the available reserve air space and capillary bed of the remaining lung. Even in young individuals too extensive resection may lead to immediate difficulties with pulmonary edema, especially if transfusions in even slightly excessive amounts are given, or to later difficulties because of strain on the right heart. In general, the best indications for surgical treatment in bronchiectasis are presented in young patients who have involvement of one lobe or one lung, or one lobe and an adjacent portion of the adjoining lobe. Some patients presenting bilateral bronchiectasis which is much more extensive on one side may be so greatly benefited by excision of the worst portion of the lung that both the patient and the surgeon are content to tolerate the small residue which is left.

The surgical indications for excision in bronchiectasis of a localized type may be listed as follows:

1. Profuse or repeated pulmonary hemorrhage.
2. Recurrent local pneumonitis.
3. Profuse secretion.
4. Putrid sputum.
5. Chronic atelectasis, with or without demonstrable bronchial stricture.
6. The presence of benign tumor or foreign body with secondary bronchiectasis.
7. Tuberculous stenosis with secondary bronchiectasis of a symptom producing type.
8. Less extensive disease with persistent or recurrent symptoms which justify the risk of surgical excision.

Pulmonary resection for bronchiectasis may be carried out at almost any age if the condition warrants. In the present series the youngest patient operated upon was two and one-half years of age and the oldest fifty-six. Patients in the extremes of age, however, are not the most desirable candidates for chest surgery, and the risks attendant upon it are greater in both groups. The difficulties of anesthesia in the younger individuals, the dangers of suffocation from excessive secretion and swelling of the larynx producing laryngeal obstruction after bronchoscopy, or the use of an endotracheal tube definitely add to the hazard. In the older age group, cardiovascular complication, emphysema, reduced elasticity of the lung with poor expansion and the greater dangers of embolic phenomena again increase the risks. The best results are obtained in children and young adults, though surgery need not be confined entirely to this age group.

Pre-operative Care

Pulmonary resection for bronchiectasis except for the emergency indication of profuse hemorrhage is strictly an elective procedure and all possible precautions should be taken to render conditions as ideal as possible for the operation. A recent respiratory infection or bout of pneumonitis usually means increased bacterial activity and probably should call for a postponement of op-

eration. Sinus disease and nasal obstruction with profuse nasal drainage should be controlled if possible before operation. Postural drainage to cut down secretion and relieve odor may also be of help. Preliminary treatment with penicillin and sulfonamides and the use of chemotherapeutic agents by inhalation in order to reduce sputum and the amount of bacterial activity may be of distinct value. Bronchoscopic aspiration in the patient with a large amount of sputum, particularly just before anesthesia is induced or immediately afterwards may aid greatly. Various measures to improve the patient's general condition, particularly in raising the hemoglobin and so forth may be quite beneficial. Of course, cross-matching and the provision of an adequate supply of blood for transfusion is mandatory.

Anesthesia is all-important. Quite a variety of techniques are available, but whatever the method chosen it must provide the following things if it is to be satisfactory:

1. Good anesthesia of controllable depth.
2. Adequate provision for repeated aspiration of secretions from the bronchial tree.
3. A high oxygen concentration so that cyanosis may be avoided.
4. A means of repeated periodic expansion of the remaining portions of the lung during the operative procedure.
5. An anesthestic agent from which the patient recovers promptly without prolonged postoperative unconsciousness.

This usually resolves itself into some type of combined anesthesia involving some combination of pentothal, curare, nitrous-oxide, oxygen, cyclopropane or ethylene, and the use of an intratracheal tube.

The operative technique may vary widely. Many lobectomies are performed in direct lateral position. We have always preferred a three-quarters prone position with posterior approach for most of these operations, though a middle lobe or upper lobe resection can be done adequately through an anterior approach. In positioning the patient, particularly the one with profuse secretions, care must be exercised to avoid turning the patient on the good side for fear of flooding it with secretions, even though the patient has apparently emptied the lung before operation. Anesthesia or manipulation may release a flood of secretion sufficient to almost drown the patient. Early clamping of the bronchus as soon as the chest is opened may help the anesthetist a great deal by cutting off the continuous escape of pus from the bronchiectatic lobe as it is manipulated. If the lobe is easily mobilized and the fissure is quite complete the application of a tourniquet may serve the same purpose.

The lobe to be excised may then be completely freed from the chest wall, diaphragm and mediastinum before proceeding with the hilar dissection, if this can be readily accomplished. However, if it is very densely adherent or if profuse bleeding is encountered in freeing it, it may be advisable to complete the hilar dissection and amputate the lung from the hilum before freeing it from the chest wall so as to avoid spillage, reduce bleeding and to allow the surgeon a little greater latitude in its removal. When this is done any bleeding which is encountered must come from the chest wall rather than from the lung itself and is more readily controlled.

Lobectomy by individual ligation of the incoming arteries, outgoing veins, with primary section and suture of the bronchus, is the most satisfactory procedure if the fissures are complete or can be readily dissected. This method leaves almost no devitalized tissue in the wound and greatly reduces the incidence of empyema and pleural complications. Less desirable but still quite satisfactory is the application of crushing clamps and suture of the lung so crushed. This method is necessary in the presence of incomplete fissure or in smaller excisions of portions of lobes, and has proven quite useful. Less desirable still is the mass ligation technique in which considerable strangulated tissue must be left in the stump as a possible source for future suppuration.

Following removal of the desired portion of the lung and the closure of the bronchus and suture of the crushed portion of the lung, the remaining lung should be expanded as the chest is filled with sterile saline to localize any bronchial or parenchymal air leakage which if found must be controlled with additional sutures. The escape of very fine bubbles around suture holes in the lung parenchyma should, however, not be a cause for concern as the suction catheters will well take care of any slight leakage.

After the removal of the lobe and before closure of the chest the remaining portions of the

lung must be freed from the chest wall over a wide area and any limiting scar tissue dissected free from the lobe so that it may expand freely to obliterate the pleural space. It may be and

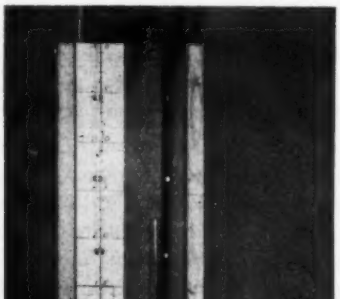


Fig. 1. Motor operated, adjustable, constant negative pressure suction apparatus.

frequently is desirable to pinch the phrenic nerve as it leaves the pericardium for the diaphragm in order to reduce the size of the residual space temporarily and eliminate the available pocket for fluid accumulation. This is particularly valuable in patients in whom more than one lobe has been excised or in whom the excision has produced some deformity of the lobe or some reduction in its ability to expand downward.

The bronchial stump should be well buried in the adjacent pleura or lymph nodes to favor its rapid healing and obliteration. Whether the surgeon dusts sulfonamide powder on the bronchial stump or in the pleural cavity is a matter of individual preference though it should be governed somewhat by the amount of possible contamination which may have occurred. Following lobectomy some surgeons close without drainage while others close with a single tube for under water seal drainage. We have preferred to insert two or three intercostal catheters of about No. 18 size placed in strategic points in which fluid has a tendency to accumulate postoperatively, and to apply to these catheters a continuous negative pressure of about 15 centimeters of water by a controlled motor suction apparatus for twenty-four to seventy-two hours postoperatively in order to maintain expansion of the lung and to remove all secretion from the pleural cavity. If the fluid is removed the lung will become adherent and obliterate the space before infection has a chance to develop. Since using this method we have not encountered a single postoperative empyema in lobectomy operations done by the individual ligation or segmental resection technique and have not found it necessary to aspirate a single patient's chest to remove fluid during the postoperative period.

Closure of the chest wall may be accomplished by the use of pericostal sutures to approximate the ribs, leaving them in position to take the tension off the intercostal suture line if some difficulty is encountered in approximating the ribs. If not, the pericostal sutures may be removed as soon as the closure is effected by suture of the intercostal muscles. It is important in closure that no dead spaces be left in which fluid might accumulate to lead to subsequent chest-wall abscess.

During the operation the patient's condition must be followed closely, and fluid and blood supplied as they are lost or as they are needed to maintain the patient's circulatory balance. Sufficient blood should be on hand in the blood bank to take care of the patient's needs, to replace that lost during the operative procedure, as well as for any emergency which may arise. The danger of over transfusion must always be kept in mind, particularly in patients who have undergone bilateral resection or who have had considerable disease in the contralateral lung, lest pulmonary edema be induced.

Before the patient is allowed to come out of the anesthetic the lung must be thoroughly aspirated to remove all secretions and bronchoscopic aspiration carried out on the slightest suggestion of any retention. Again as the patient is moved from the operating table care must be taken not to turn the patient over to the good side lest any secretion migrate to other lobes and cause trouble.

Postoperatively the patient is given opiates in sufficient dosage to control pain, but not to suppress cough. The head-down position is used for a few hours to induce drainage of secretions from the deeper portions of the lung. The patient is encouraged to change position frequently as soon as conscious and to cough and raise at regular intervals in spite of pain. Steam inhalations and expectorant drugs are used as indicated. Any

sharp rise in temperature should call attention to the probability of retention of secretion, and if it cannot be coughed out promptly bronchoscopy and aspiration should be done at once. The possibility of laryngeal obstruction from trauma following the use of the intratracheal tube or the bronchoscope must be borne in mind in small children and any stridor carefully watched, performing tracheotomy early in order to avoid possible complete obstruction.

The patient who received sulfonamides and penicillin for forty-eight hours pre-operatively is continued on these drugs postoperatively for several days until everything appears to be going well. He is encouraged to move around, to sit up early, and to get out of bed as soon as his strength will permit. The intercostal drainage catheters are removed in forty-eight to seventy-two hours and the openings sealed with collodion or mastisol. Skin sutures are removed in five to seven days. If no complications arise and the patient's general condition is good, he may be ready for discharge to his home in nine or ten days, and usually under two weeks from the date of operation. The following table of our local series of pulmonary resection from 1937 to 1946 performed for various diseases is shown in order to illustrate the differences in risk as carried out for different pathologic conditions.

You will note that pulmonary resection for bronchiectasis has been carried out in fifty-one individuals, seven total pneumonectomies and forty-four lobectomies, with but one death in the operative series within thirty days of surgery. This child developed a temperature of 106 on the operative table, rapidly mounting to 108, and died within a few hours without regaining consciousness. This operation was performed in hot weather before the gas cooling chamber had been added to the anesthesia machine in order to control body temperature. The operative mortality then for pulmonary resection for bronchiectasis in our hands has been 1.96 per cent in contrast to a total lobectomy mortality of 4.34 per cent and a pneumonectomy mortality of 22.86 per cent for all conditions combined.

TABLE I. PULMONARY RESECTION
1937-46

Pathologic Condition	Pneumonectomy		Lobectomy	
	No. of Cases	Mortality 30 Days	No. of Cases	Mortality 30 Days
Carcinoma	11	3	0	0
Abscess	4	2	7	1
Tuberculosis	9	1	6	1
Bronchiectasis	7	0	44	1(2.04%) (1.96%)
Benign Tumor	3	1	6	0
Cyst	0	0	5	0
Miscellaneous	1	1	1	0
Totals	35	8(22.86%)	69	3(4.34%)

Any consideration of mortality and operative risk of lobectomy for bronchiectasis must take into account the age of the patient, general condition, amount of secretion, extent of the lesion, and existing pre-operative complications if a fair evaluation is to be made. The risk of operation and the danger of complications is certainly greater in a young child with extensive disease and profuse secretion and perhaps a previous empyema, than it is in the husky young adult as seen in the various army camps.

The results in surgical treatment of bronchiectasis are eminently gratifying. No more grateful patient can be found in any field of medical endeavor than the young individual who has been dramatically relieved of a chronic loose cough with profuse, foul expectoration. The change in appearance, in attitude, and whole outlook on life is most striking. To return these young people to normal social and business activities and to an active life which has been denied them for many years because of their distressing disability is indeed a source of deep personal satisfaction to the surgeon.

THE TUBERCULOUS VETERAN

The veteran returning with tuberculosis places an added responsibility on the community. The incentive for many veterans to remain in their homes will constitute a menace to the public health. If we are to cope with this problem we must approach it with an understanding attitude. We must remember that although these veterans are the responsibility of the Government, they are also residents of the community, and, as such, are entitled to the same consideration as is given tuberculous non-veterans. When the tuberculous veteran returns to his home community he presents a health problem that must be solved by that community.—WILLIAM H. HICKERSON, M.D., NTA Bull., December, 1945.

THE VALUE OF THE X-RAY EXAMINATION IN THE DIAGNOSIS OF RUPTURED INTERVERTEBRAL DISC

HAROLD O. PETERSON, M.D.
Saint Paul, Minnesota

ALTHOUGH the diagnosis of posteriorly herniated disc is now made very commonly, it should not be regarded as an easy diagnosis to make. The greatest difficulty arises in the atypical or borderline cases both from the clinical and roentgenologic standpoint. The value of x-ray examination has changed considerably since the diagnosis of ruptured or protruded disc first became popular about twelve years ago. In the early days of the present concept of the ruptured disc all the patients had some type of spinogram or myelogram before operation. This was due to the fact that the clinical findings were not clearly understood. At the present time in the hands of capable and experienced physicians, it is not necessary to resort to myelography in a large percentage of the patients. It is advisable, however, in all cases suspected of having a herniated disc to obtain routine anteroposterior and lateral films of the lumbar spine and sacrum, even though it is never possible to make the diagnosis of a ruptured disc from these films. Other diagnoses may occasionally be made such as tumors, fractures, and infections, which will account for the patient's complaints and eliminate the need for myelography and alter the treatment. Narrowed discs, scoliosis, and straightening of the normal lumbar and cervical lordosis may be present in cases with a ruptured disc, but they have no conclusive diagnostic significance.

If the patient has been examined by a physician skilled in the diagnosis of the herniated disc and there is still doubt either as to the presence of or the level of a herniated disc, myelography may be necessary. This is not a simple procedure and consequently should not be undertaken unless it is genuinely indicated. Furthermore, it is not 100 per cent accurate. Although many substances have been injected into the spinal canal to outline the dural sac, most examiners have abandoned all but Lipiodol or the newer preparation, Pantopaque. Lipiodol, because of its high viscosity, is more difficult to inject and aspirate, but produces very good x-ray visualization. Pantopaque is easier to inject and remove, and its use also gives very satisfactory results. A further advantage of Pantopaque is the fact that it is slowly absorbed, which is not the case with Lipiodol.

The accuracy of the diagnosis with either substance is probably the same. Occasionally, a herniated disc may be present and no deformity be demonstrable. This is more often true at the lumbosacral junction than elsewhere. More commonly small deformities are found in the myelographic study and sometimes even large deformities and no herniated disc found at operation. This happens more often in the upper lumbar levels. Consequently one should be quite cautious about the diagnosis of a herniated disc above the level of the third lumbar vertebra.

In most cases the deformity as visualized by myelography is pathognomonic for a herniated disc. In a significant number of patients a positive diagnosis cannot be made from the myelogram alone, and a careful correlation of the myelographic and clinical findings is necessary. It is in this group of cases where the services of a very competent clinician is greatly appreciated by the radiologist. Surgery in these cases may often result in negative explorations. One should not operate primarily on the strength of an atypical x-ray deformity. In such cases, the burden of the decision of whether or not to operate lies with the clinician.

Read at the annual meeting of the Minnesota State Medical Association, St. Paul, Minnesota, May 22, 1946.

DANGERS OF AERIAL TRANSPORTATION TO PERSONS WITH PNEUMOTHORAX

Evidence accumulated seems adequate to justify warning all patients with pneumothorax to avoid transportation by airplane unless they can be assured that no altitude will be attained beyond that which they have previously tolerated without discomfort. Even under the latter condition it is possible that some harm might be done to unstable tuberculous lesions by the rather large degrees of alternate expansion and collapse which may be occurring repeatedly during a flight, especially when there are frequent landings.

—Dangers of Aerial Transportation to Persons with Pneumothorax, W. Randolph Lovelace II, M.D., and H. Corwin Hinshaw, M.D., *Journal of the American Medical Association*, April 11, 1942.

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE REPORT

ARTHUR H. WELLS, M.D., HAROLD H. JOFFE, M.D., and J. K. BUTLER, M.D.
Duluth, Minnesota

DR. A. H. WELLS: This is one of the best diagnostic problems of the year. A careful consideration of the patient's progress should lead a good diagnostician to include the proper diagnosis in his differential study. After the case presentation, we will give you our interpretation of the literature on the subject.

Case Report

DR. M. S. MUNSON: Case 3420. This forty-year-old white male has been a known hypertensive for about ten years preceding his death on June 10, 1946. He was followed intermittently in the medical outpatient clinic and at the University of Minnesota Hospitals from 1938 to March 13, 1946. When first seen at the University, his blood pressure was 233/130; and since 1938 he has been troubled with shortness of breath on exertion, paroxysmal nocturnal dyspnea, and occasional mild precordial pain when working hard. In 1943 he was placed on potassium thiocyanate therapy with some benefit. All of his symptoms increased in severity in June, 1945, with associated nocturia, ankle edema, and abdominal swelling.

He was not seen at the University from 1943 until January 14, 1946, when he was admitted to the University Hospital, at which time a physical examination revealed some dyspnea even while sitting with relatively clear lung fields. The heart was massively enlarged, the left border being at the anterior axillary line and the right border about 4 cm. to the right of the midsternal line. There were frequent premature beats with a rate of 76 per minute and a blood pressure of 250/145. Fundoscopic examination revealed "grade II changes." The abdomen was enlarged with a fluid wave present, and the liver was palpable 9 to 10 cm. below the costal margin. The spleen was also enlarged. There was a 1 plus edema of the ankles and sacrum. Urinalyses revealed a specific gravity of 1.015 with no albumin and with a negative microscopic examination. The hemoglobin was 11 grams; the red blood cell count 3,510,000; the white blood cell and differential count were normal. The blood urea nitrogen was 35 mg. per cent with a creatinine of 2.2 mg. per cent. The venous pressure was 25.5 cm. of water and the vital capacity was 2600 c.c. Chest plate revealed extreme cardiac enlargement with evidence of pulmonary congestion. Electrocardiogram revealed a left ventricular strain pattern with delayed intraventricular conduction.

The patient was placed on a cardiac regimen which included bed rest, digitalis, a Schemm diet, potassium nitrate, and mercurial diuretics. His course was quite stormy, but he improved materially on the above therapy. However, he had a number of febrile episodes, some of which were associated with sweats and abdominal pain. One of these episodes was undoubtedly thought to be due to a pneumonia in the left lower lobe and another probably due to an infarct in the right lower lobe. However, he continued to complain of rather severe abdominal pain which was frequently associated with marked sweats and a sedimentation rate "above 100 mm." per hour.

Cholecystogram and gastrointestinal x-ray studies on two occasions revealed a nonfunctioning gall bladder and negative gastro-intestinal pathology. Bone marrow biopsy failed to reveal evidence of Hodgkin's disease. Peritoneoscopy was performed and verified the clinical impression of an enlarged spleen. A liver biopsy showed a mild degree of portal cirrhosis. Renal function studies revealed a moderate impairment of renal function and "a number of urinalyses" done after admission showed a 1 to 2 plus albuminuria with occasional casts, white and red blood cells.

He was seen by the department of surgery of the University Hospital which agreed with medicine section that the abdominal pain was not explainable on the basis of gall-bladder disease and, therefore, felt that surgery was not indicated. His condition improved during the prolonged hospital stay with considerably less abdominal pain and very little fever during the last three weeks. He regained some strength, had very little orthopnea, and was edema-free. However, the sedimentation rate remained "very elevated" and his hemoglobin dropped about one gram during this period. He was discharged on March 13, 1946, on a Schemm diet and digitalis grains 1½ daily, with instructions to increase his exercise very gradually over a period of four to six weeks and to return to the hematology clinic for further observation. The final diagnosis at the University Hospital was hypertensive heart disease with right and left failure, bronchopneumonia left lower lobe, pulmonary infarction and portal cirrhosis. In spite of the extensive studies, the cause of abdominal pain could not be determined.

He was admitted to St. Luke's Hospital on May 8, 1946, approximately one month before his death and about two months after his discharge from the University Hospital on March 13. Examination revealed no essential change in the physical findings. The blood pressure was 250/150. A neurological examination was normal. During the thirty-four days preceding his death, the white blood cell count ranged from 5,000 to 18,000 with as high as 94 per cent neutrophils, 34 per cent of which were non-segmented. The hemoglobin was 9.5 grams with a red blood cell count of 3,300,000. The blood urea nitrogen rose from 3 to 140 mg. per cent;

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.
Clerical assistance by Miss Faith Gugler.

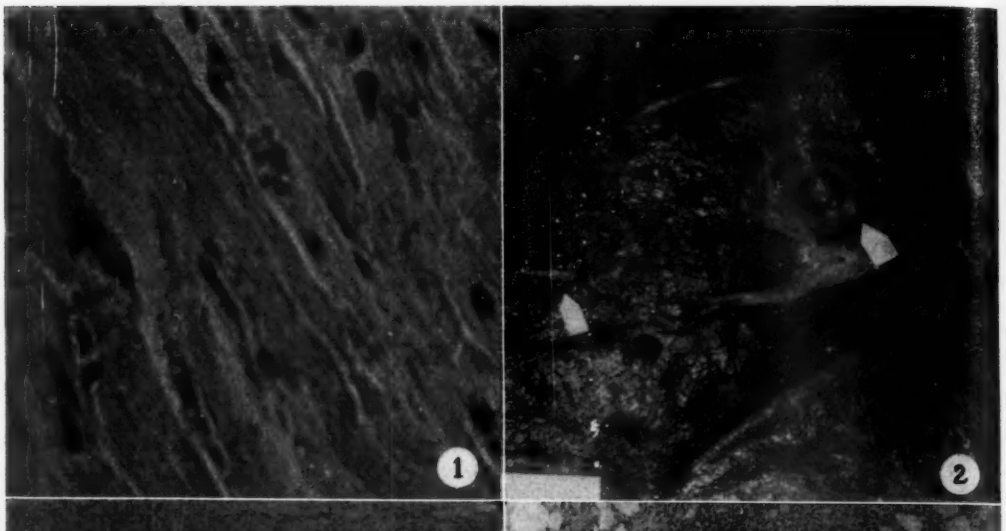


Fig. 1. Patchy atrophy and necrosis of myocardial muscle fibers. Fig. 2. Small infarcts in liver, also pale finely granular fibrous kidney. Fig. 3. Recanalized lumen of small artery in liver with fibrosis of portal area (healed lesion). Fig. 4. Necrosis of media of small pancreatic artery with dense neutrophilic infiltration (acute active lesion).

the creatinine from 1.9 to 4.3 mg. per cent; and the icterus index from 5 to 12. The total plasma proteins were 6.6 grams per cent and the galactose tolerance test was normal. Urinalyses revealed a 1 to 4 plus albumin with the highest specific gravity of 1.014 on two tests with 10 red blood cells and 20 pus cells per high power field in two samples.

The patient's course was progressively downhill with gradual loss of strength and weight, while he complained of generalized malaise and abdominal discomfort. He developed small suppurating furuncles about the face and chin, became extremely restless, and during the last day developed some twitching of his stiffened limbs and eyes. There was terminal cyanosis with a fall in blood pressure to 154/100. Expiration was on June 10, 1946, thirty-four days after admission.

DR. A. H. WELLS: The case is now open for diagnosis.

PHYSICIANS: Hypertensive cardiovascular renal disease terminating in uremia, chronic pyelonephritis, subacute bacterial endocarditis with intestinal thrombosis, miliary tuberculosis, carcinoma of the pancreas and hypertensive disease, pheochromocytoma, and polycystic disease of kidneys.

Autopsy

DR. A. H. WELLS: This patient had periarteritis nodosa. There was a severe involvement of the small arteries of the heart, lungs, liver, kidneys, intestines and pancreas. The patient very likely also had hypertensive cardiovascular renal disease, the lesions of which blend in with those of the periarteritis nodosa and cannot be differentiated from them. It is difficult to say whether

chronic congestive heart failure or uremia was the more important in the immediate cause of death.

I will briefly review the positive findings of the postmortem examination. The heart weighed 800 grams. There was alteration of coronary arteries, myocardium, pericardium, and right auricle. The coronary arteries had a severe atherosclerosis with hemorrhages into atheromatous areas and active neutrophilic and lymphocytic infiltration in their walls. One large branch of the anterior descending coronary had an old occlusion and recanalization. The myocardium had extensive patchy, small areas of fibrous scarring not clearly visible on gross examination. There were small areas of necrosis, atrophy, and degeneration (Fig. 1.) There was some cellular proliferation and edema of walls of the smaller arterioles. The pericardium of the ventricles was covered with a thin sheet of pinkish staining, fibrinous exudate with beginning organization and rather mild patchy lymphocytic and neutrophilic infiltration of the surface. No bacteria could be demonstrated with special stains or cultures of this exudate. The right auricula had a 3 cm. in diameter, plaquelike area of fibrosis with two small mural thrombi near the margins. There was myomalacia of the auricular musculature and rather extensive fibroblastic proliferation and mild neutrophilic and lymphocytic infiltration of the area. No arteries could be identified. The lungs had a peculiar acute inflammatory process characterized primarily by thromboses of the smaller arteries and arterioles with dense neutrophilic infiltration in surrounding air spaces about the vessels. Large clumps of Gram-positive cocci, rarely in chains, were demonstrated in these vessel walls and air spaces. A careful study failed to reveal bacteria in any of the other organs. Large, dark-red, pyramidal-shaped areas in the liver (Fig. 2) were found to be old healed infarcts with a completely missing liver tissue and severely congested sinusoids. Rare, recent infarcts with necrotic liver cells were found. Numerous medium-sized arteries with recanalized lumina were present (Fig. 3). A few of these arteries had organizing thrombi with pigment-laden phagocytes and lymphocytes in the vicinity. There was a rather extensive cellular proliferation and hyalinization of small hepatic artery walls throughout all sections. This was associated with a fibrosis of the portal areas amounting to a grade I cirrhosis of a type pathognomonic of periarteritis nodosa. The spleen had a grade III hyalinization and thickening of central artery walls without thromboses typical of that found in hypertensive disease. There were many small arteries with necrotic walls and severe neutrophilic infiltration and fibroblastic proliferation in the periadrenal connective tissue. The pancreas had occasional moderate-sized arteries with necrosis of their walls and dense neutrophilic infiltration of the walls and surrounding tissues (Fig. 4). There was an interstitial fibrosis (grade II) throughout the pancreas. The kidneys had rather severely thickened and cellular walls of inter- and intralobular arteries and a hyaline necrosis of occasional arterioles (Fig. 5). There was moderate interstitial fibrosis, occasional hyalinized glomeruli and frequent granular casts in tubules. There were patchy clumps of necrotic small artery walls in the submucosa of the small intestine with overlying acute ulcerations of the mucosa and adjacent fibroblastic proliferation and hyalinization in the submucosa. Nerves from the sacroiliac plexus reveal some cellular proliferation and edema of artery walls in the perineurium and no necrosis of nerve fibers. The arteries of the meninges had no sclerotic or inflammatory change.

Fig. 5. Cellular proliferation and edema with near obliteration of lumen of small intralobular artery of kidney, also hyaline degeneration of arteriole.

Discussion

DR. A. O. SWENSON: Which came first, the hypertensive cardiovascular renal disease or the periarteritis nodosa?

DR. A. H. WELLS: I don't know. I'm inclined to believe that the patient developed his idiopathic hypertensive disease first. As a matter of fact, I'm not certain but that the two conditions are the same disease process in this individual.

Periarteritis nodosa is a morphologic entity caused by a variety of agents and characterized primarily by a widespread segmental necrosis of small artery walls with subsequent inflammatory reaction, thromboses, hemorrhages, aneurysms and infarctions and scarring of involved organs. The disease is rare. Out of 460,000 admissions at the University Hospital of the University of Michigan there were only 14 cases.[14] The disease is three times more frequent in males.[10] The average age of onset is 36.9 years, although it may occur from the first month of life[37] to advanced age. The disease has been described as occurring spontaneously in pigs, dogs, deer, and calves.[15] Seventy per cent of the patients die in the first four months.[8] However, cases living from eight to twelve years have been reported. Approximately 90 per cent of the cases terminate fatally. Only 15 per cent are recognized before the necropsy.

Pathology

Periarteritis nodosa is a disease primarily of the small artery and arteriolar walls. Rarely, large arteries, veins, capillaries, and in our case auricular walls are involved.

The large serous cavities and joint surfaces also have acute inflammatory changes (polyserositis and arthritis). The artery wall lesions are scattered, segmental, and focal in nature. The histogenesis has been divided into four steps: (1) The original degeneration or necrosis which involves the outer third of the media of arteries with vasa vasorum (Fig. 4) and the entire thickness of arteriolar walls (Fig. 5). (2) There follows a severe neutrophilic infiltration (Fig. 4) in the necrotic areas which extends to the intima, adventitia and perivascular tissues. (3) The healing process includes organization of thrombosed lumina, granulation tissue reaction in perivascular areas and lymphocyte, plasma cell, and eosinophil infiltration. (4) Scattered lesions or all involved areas may be completely healed by scar tissue (Fig. 3).

The sequelae of the artery wall injury, including thrombosis, aneurysm formation, rupture with hemorrhage and occlusion by cellular proliferation, may be followed by atrophy, degeneration, and infarction of the various organs and tissues of the body. In a review of 87 cases reported in the English literature,[10] the following percentages of involvement were recorded: kidney 87 per cent, heart 84 per cent, liver 71 per cent, spleen 31 per cent, and lungs 25 per cent. Rarely, the principal and at times the only lesions may be in isolated organs.[14] No tissue or organ is entirely immune to the disease.

Isolated or milder degenerative changes in artery walls of unknown etiology including those found in rheumatic fever, malignant hypertension, disseminated lupus erythematosis, scleroderma, dermatomyositis, and Libman-Sacks disease, apparently cannot be differentiated from some of the lesions of periarteritis nodosa.

Etiology

Some of the causes of periarteritis nodosa are known. The exact mechanism of action of the various toxic and inciting agents needs further clarification, but at present the injury of the artery walls appear to be best explained as a result of allergic responses. A high percentage of patients with periarteritis nodosa have prodromal, associated, and precipitating illnesses[32], such as acute tonsillitis, acute sinusitis, scarlet fever[13], rheumatic fever[8,23,30,32,35], serum sickness[28], sulfatherapy reaction[28], eclampsia[35], asthma (15 per cent)[10,33], trichinosis[26], and allergic reaction to iodine.[27] Rich and co-workers have reported cases as the result of serum therapy alone or associated with sulfonamide therapy in pneumonia[28], also in iodine hypersensitivity reaction.[27] They have produced typical arterial lesions in rabbits with serum and sulfonamides.[29] Some of the experimental rabbits also developed typical acute glomerulonephritis and others "Ashoff bodies" in the myocardium. This allergic relationship of acute glomerulonephritis, rheumatic fever, malignant hypertension, and a series of rarer diseases including Osler's erythema group, purpura hemorrhagica abdominalis[32], scleroderma, dermatomyositis, disseminated lupus erythematosus, and Libman-Sacks syndrome[2] to periarteritis nodosa are repeatedly referred to in the literature.

The hypertension which occurs in 64 per cent of patients with periarteritis nodosa is easily explained on the basis of interference of arterial flow (Goldblatt kidney) due to the arteritis. However, in many cases, as in our present patient, the hypertension appears to have preceded the periarteritis by years. Thus, a systemic predisposition to periarteritis nodosa may be indicated. Similar predispositions are also thought to exist in cases of asthma and rheumatic fever. On the other hand, the diffuse necrotizing arterial lesions known as periarteritis nodosa may rarely occur in certain individuals as an accentuation of these various diseases.

Bacterial invasion of arterial walls is a well known and separate disease process not to be confused with periarteritis nodosa. The end result of healed arterial occlusion, aneurysms and tissue scars may well be difficult to differentiate in these two conditions. Filterable virus parasites, rickettsia, and other infectious explanations of periarteritis nodosa are conjectural. No infectious agent has been demonstrated in the artery walls.

Clinical Manifestations

"Triads" and "cardinal symptom complexes" have been described without general acceptance because of the varied and bizarre manifestations in many cases of periarteritis nodosa. A review of 101 cases in the English literature[10] revealed the following frequency of signs and symptoms: fever, eighty; leukocytosis, seventy; albuminuria, 65; hypertension, (64 per cent); rapid onset, fifty-eight; abdominal pain, fifty-seven; edema, fifty-two; loss of weight, forty-eight; neuritis, forty-eight; hematuria, forty-seven; dyspnea, forty-one; weakness, forty-one; emaciation, thirty-six; cough, thirty-six; vomiting, thirty-one; sensory involvement, thirty-one; headache, twenty-nine; arthritis, twenty-seven; atrophy, twenty-five; visual disturbances, twenty-three; purpura, twenty-two; cyanosis, twenty-one; eosinophilia, nineteen; nausea, seventeen; nodules, sixteen; pain in chest, sixteen; allergy, fifteen; convulsions, fifteen; icterus, twelve; vertigo, eight; and positive syphilitic serology, eight. The clinical recognition of periarteritis nodosa can be arrived at in most cases by a careful study of four considerations: (1) the general reaction, (2) multiplicity of organ involvement, (3) laboratory studies, (4) the exclusion of differential diseases. The common general reactions are fever, leukocytosis, weight loss, weakness, and eosinophilia. If there is no other explanation for a prolonged fever, periarteritis should be considered. This is especially true if there are apparent lesions with several different organs and tissues of the body. This multiplicity of organs with corresponding wide variation of signs and symptoms is characteristic of the disease. The laboratory may aid in making an absolute diagnosis from a biopsy of skin nodules which occur in about 15 per cent of cases. Muscle biopsy without palpable nodules may also be diagnostic.[15] The leukocytosis is generally moderate but may become severe, reaching 70,000. Eosinophilia occurs in one out of five cases and may reach as high as 70 per cent. The urinary sediment has been described as diagnostic of periarteritis, lupus erythematosus, or Libman-Sacks disease in that it shows red blood cells, white blood cells, oval fat bodies, fatty casts, broad casts, and abnormal quantities of protein.[17] The spinal fluid may give evidence of a very low grade, nonspecific, inflammatory process. It is possible that the diagnosis may be established by experts by a sigmoidoscopic examination.[7] The eye ground changes are appar-

ently not diagnostic. The cases with complicating appendicitis, perforation or gangrene of the gastro-intestinal tract, cholecystitis, et cetera, resulting in acute surgical abdominal emergencies may be later diagnosed by microscopic study of surgically removed tissues.[84] The principal diseases to be included in the differential diagnosis are: miliary tuberculosis, Hodgkins' disease, syphilis, trichinosis, myositis, purpura hemorrhagica, typhoid fever, amebiasis, abscess of liver, meningitis, brain tumor, alcoholic polyneuritis, infectious peripheral polyneuritis, lead neuritis, hypertensive cardiovascular disease with coronary and renal involvement and parasitic infestations.

Treatment

One case may have been cured by the use of sulfonamide therapy.[9] Many others have not responded to this drug. Since periarteritis nodosa is frequently associated with other infections, sulfonamide and penicillin therapy might find some practical application in certain cases. Otherwise, the therapy is primarily symptomatic. Salicylate, papaverine hydrochloride, and opiates have been mentioned frequently.

Summary

We have presented a case of periarteritis nodosa in a man of forty years who for ten years had a severe hypertension and showed some evidences of cardiac insufficiency. These symptoms became severe during the last year. There was in addition an unexplained abdominal pain, rapid red blood cell sedimentation rate, intermittent fever, cough, and loss of weight and strength. He died of chronic congestive heart failure and uremia. Several lesions of different ages occurred in small arteries and arterioles in the heart, lungs, liver, spleen, pancreas, and kidneys.

An incomplete survey of the literature leads us to the belief that periarteritis nodosa is a morphologic entity due to a variety of inciting agents. Many cases can be explained on the basis of an allergic reaction ("hives of arteries"). There is an interrelationship between periarteritis nodosa and malignant hypertension, glomerulonephritis, rheumatic fever, asthma, eclampsia, and other allergic conditions.

A review of the pathology, etiology, clinical manifestations, and treatment is included.

Final Diagnosis:

1. Periarteritis nodosa
   a. Involving the heart, lungs, liver, spleen, pancreas, adrenals, and kidneys
   b. Chronic congestive heart failure
   c. Uremia
   d. Terminal bronchopneumonia
2. Hypertensive cardiovascular renal disease

References

1. Allen, P. D.: Periarteritis nodosa simulating acute abdominal condition requiring operation. Arch. Surg., 40:271-276, (Feb.) 1940.
2. Banks, B. M.: Is there a common denominator in scleroderma, dermatomyositis, disseminated lupus erythematosus, the Libman-Sacks syndrome and polyarteritis nodosa? New England J. Med., 225:433-444, (Sept. 18) 1941.
3. Banowitch, M. M.: Polayes, S. H., and Charet, R.: Periarteritis nodosa; report of five cases. Ann. Int. Med., 16: 1149-1179, (June) 1942.
4. Bickford, J. A. R., and Prentice, A. I. D.: Periarteritis nodosa. Report of a case. Lancet, 1:689-690, (June 2) 1945.
5. Buxton, R., and Kurman, R. L.: Periarteritis nodosa. South. Med & Surg., 107:68-70, (Feb.) 1945.
6. Diaz-Rivera, R. S., and Miller, A. J.: Periarteritis nodosa; a clinico-pathological analysis of seven cases. Ann. Int. Med., 24:420-443, (Mar.) 1946.
7. Felsen, J.: The sigmoidoscopic diagnosis of periarteritis nodosa. Ann. Int. Med., 15:251, (Aug.) 1941.
8. Finkelstein, W., and Brennan, P. J.: Periarteritis nodosa; brief review and case report. Connecticut M. J., 7:104-106, (Feb.) 1943.
9. Goldman, B. A., Dickens, K. L., and Schenken, J. R.: Apparent cure of periarteritis nodosa with sulfapyridine. Report of case. Am. J. M. Sc., 204:443-447, (Sept.) 1942.
10. Harris, A. W., Lynch, G. W., and O'Hare, J. P.: Periarteritis nodosa. Arch. Int. Med., 63:1163-1182, (June) 1939.
11. Herbut, P. A., and Price, A. H.: Periarteritis nodosa producing aneurysm of the renal artery and hypertension. Arch. Path., 39:274-278, (Apr.) 1945.
12. Higgins, W. H.: Periarteritis nodosa: Clinical manifestations and postmortem findings, with a report of six cases. South. M. J., 39:453-460, (June) 1946.
13. Hoyne, A. L., and Steiner, M. M.: Periarteritis nodosa complicating scarlet fever, with unusual syndrome of nephritis and polyneuritis. Am. J. Dis. Child., 59:1271-1289. (June) 1940.
14. Jones, G. M., Jr.: Periarteritis nodosa, with case reports. Ann. Int. Med., 16:920-940, (May) 1942.
15. Keith, H. M., and Baggenstoss, A. H.: Primary arteritis (periarteritis nodosa) among children. J. Pediat., 18:494-506, (Apr.) 1941.
16. Kernohan, J. W., and Woltman, H. W.: Periarteritis nodosa; clinico-pathologic study with special reference to the nervous system. Arch. Neurol. & Psychiat., 39:655-686, (Apr. 1) 1938.
17. Krupp, M. A.: Urinary sediment in visceral angiitis (periarteritis nodosa, lupus erythematosus, Libman-Sacks "disease"); quantitative studies. Arch. Int. Med., 71:54-61, (Jan.) 1943.
18. Logue, B., and Mullins, F.: Polyarteritis nodosa: Report of 11 cases with review of recent literature. Ann. Int. Med., 24:11-26, 1946.
19. MacKeith, R.: Localized subcutaneous edema with weakness of limb muscles. A syndrome due to polyarteritis nodosa. Brit. M. J., 1:139-142, (Jan. 29) 1944.
20. Marine, D., and Baumann, E. J.: Periarteritis nodosa-like lesions in rats fed thiouracil. Arch. Path., 39:325-330, (May) 1945.
21. McCall, M., and Pennock, J. W.: Disseminated necrotizing vascularitis—toxic origin of periarteritis nodosa. Am. J. M. Sc., 206:652-659, (Nov.) 1943.
22. McCall, M., and Pennock, J. W.: Periarteritis nodosa; our present knowledge of the disease. Ann. Int. Med., 21:628-637, (Oct.) 1944.
23. Moschocowitz, E.: Essays on the biology of disease. Periarteritis nodosa. J. Mt. Sinai Hosp., 12:1054-1063, (Mar.-Apr.) 1946.
24. Payne, M. J.: Periarteritis nodosa. J. Internat. Coll. Surgeons, 4:29-34, (Feb.) 1941.
25. Perilman, M.: A case of periarteritis nodosa, the role of anaphylaxis. Brit. M. J., 1:569-570, (April 13) 1946.
26. Reimann, H. A., Price, A. H., and Herbut, P. A.: Trichinosis and periarteritis nodosa; differential diagnosis; possible relationship. J.A.M.A., 122:274-279, (May 29) 1943.
27. Rich, A. R.: Hypersensitivity to iodine as cause of periarteritis nodosa. Bull. Johns Hopkins Hosp., 77:43-48, (July) 1945.
28. Rich, A. R.: Role of hypersensitivity in periarteritis nodosa as indicated by 7 cases developing during serum sickness and sulfonamide therapy. Bull. Johns Hopkins Hosp., 71:123-140, (Sept.) 1942.
29. Rich, A. R., and Gregory, J. E.: Experimental demonstration that periarteritis nodosa is a manifestation of hypersensitivity. Bull. Johns Hopkins Hosp., 72:65-88, (Feb.) 1943.
30. Scupham, G. W., and Kinney, J. R.: Periarteritis nodosa. M. Clin. North America, 29:139-146, (Jan.) 1945.
31. Solomon, S., Kasich, M., and Kiven, N.: Periarteritis nodosa, with report of 3 cases diagnosed during life. Ann. Int. Med., 21:638-644, (Oct.) 1944.
32. Spiegel, R.: Clinical aspects of periarteritis nodosa. Arch. Int. Med., 58:993-1040, (Dec.) 1936.
33. Trasoff, A., and Scarf, M.: Periarteritis nodosa and asthma; case report. J. Allergy, 11:277-280, (Mar.) 1940.
34. Washburn, R. N., and Otto, T. O.: Periarteritis nodosa; a case with autopsy. Am. J. M. Sc., 210:640-644, (Nov.) 1945.
35. Webb, A. C.: Periarteritis nodosa in pregnancy. Arch. Path., 38:329-331, (Nov.) 1944.
36. Wechsler, I. S., and Bender, M. B.: Neurological manifestations of periarteritis nodosa. J. Mt. Sinai Hosp., 8: 1071-1078, (Jan.-Feb.) 1942.
37. Wilmer, Harry A.: Two cases of periarteritis nodosa occurring in the first month of life. Bull. Johns Hopkins Hosp., 77:275-286, (Sept.) 1945.

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
Mayo Clinic
Rochester, Minnesota

(Continued from August Issue)

The name of **H. W. Barnard,** of Granger, is included with some doubt as to whether he was a practitioner of medicine. In 1870 his name appeared, together with the names of J. D. Pollock, a dentist of New Hampton, Iowa; Dr. J. W. Reade, of Lime Springs, Iowa; Dr. Kingsbury of Leroy; and Dr. R. L. Moore of Spring Valley, in endorsement of one H. J. Stalker, an itinerant dentist.

John S. Beagle, born in 1873, graduated in 1896 from the Hahnemann Medical College of Chicago, and licensed in 1897 as a physician in Minnesota, has been said to have practiced medicine in Chatfield and also in Spring Valley. The present note is inserted to supply a correction: Dr. Beagle has stated in a letter of August 11, 1943, to the writer that although he spent his boyhood and youth in Spring Valley and was graduated from the Spring Valley High School (incidentally, in the same class with Henry S. Plummer), he never was a resident physician anywhere in Fillmore County, but in 1897 began to follow his profession in Rose Creek, Mower County. In 1898 he was married to Fantine Van Loan, of Hamilton, Fillmore County. "My life and experience have been those of the ordinary country doctor, beginning in the days of horse and buggy travel."

In 1909 Dr. Beagle moved from Rose Creek, Minnesota to Sidney, Montana, where, with the exception of a temporary removal to California, in 1926, he has remained. In Sidney, in the period from 1912 to 1919, he was associated in practice with Dr. F. A. Gowdy, who from 1896 to 1912 was a physician and surgeon of Fillmore County; in 1919 Dr. Gowdy moved from Montana to Florida.

A fuller note concerning Dr. Beagle will appear with material on the history of medicine in Mower County.

Erastus Belden, son of Emanuel Belden, of English descent, was born on March 26, 1809, and his wife, Julia Ann Lyons Belden, on March 30, 1811; both were natives of New York. Dr. and Mrs. Belden about 1835 with three young children journeyed to Ohio in search of a new home; in Elyria, Lorain County, a son, Ira, was born in January, 1837.

Soon afterward they returned to New York, to Steuben County, where they lived for some years. In 1853, with their physician son, Wallace P. Belden and two younger children, they came from Rochester, Monroe County, New York, into Southern Minnesota, and shortly afterward settled in the vicinity of Hamilton and Spring Valley in Fillmore County. A few years later they moved a short distance to the community of Frankford in Mower County.

When Dr. Erastus Belden died at Frankford in February, 1867, the *Rochester*

Post paid tribute to him as "a skillful surgeon and a thoroughly posted physician of the old school." He was buried in the Frankford Cemetery, where a large inscribed boulder marks his grave. Julia Lyons Belden died a year later in Rochester, Minnesota.

The children of Dr. and Mrs. Belden were as follows: Harriet born on April 6, 1829; Wallace P., born on January 11, 1831; Cordelia, on December 13, 1833; Ira W. on January 14, 1837; and Ermina and Orpheus G., twins, on April 12, 1845. About the lives of the daughters little has been learned. The second son, Ira, was a blacksmith. He preceded the rest of the family into Minnesota and lived in Frankford for about ten years, serving most of the time as constable or as deputy sheriff. Later he was in Zumbro Falls and finally in Maseppa. Orpheus, the third son, studied medicine, but did not complete the course. He was a farmer near Frankford; in the eighties he managed a hotel, the Valley House, in Spring Valley for his brother Wallace. He lived in Rochester, Olmsted County, for a few years and later returned to Spring Valley to spend the remainder of his life. More information has been available concerning the eldest son, Dr. Wallace P. Belden.

Wallace P. Belden, the second child and first son of Dr. and Mrs. Erastus Belden, was born in or near Rochester, New York, on January 11, 1831. The family removed to Minnesota Territory in 1853, as has been told, and settled in the region of Spring Valley and Hamilton, in Spring Valley and Sumner Townships, Fillmore County. Young as he was, Wallace J. Belden was a qualified physician, and he and his father became known professionally in Austin, Mower County, and in Albert Lea, Freeborn County, as well as in their chosen community in Fillmore County.

In the course of the journey west, Wallace Belden met and was married to a young girl, Emilia (Oakey?), from Oregon, and at various times in succeeding years Dr. and Mrs. Belden made visits to the wife's home in Marion County, Oregon. Their first children, triplets, of whom two died at birth, were born there; the third, Emma, lived to grow up. There were other children, a daughter Jennie, and a son Oakey who lived only a few years; the son's grave is in the village cemetery of Hamilton. Not long after his death Mrs. Belden died in Oregon and was buried there. The two daughters, Emma and Jennie, thereafter remained in the West and until they married lived with their maternal grandmother in Oregon. Years later, in the middle eighties, Dr. Belden was married to Miss Josie Porter, of Spring Valley; of this marriage there was one child, who died at birth.

Shortly after his arrival in Fillmore County, in 1853, Dr. Wallace P. Belden, young, ambitious, and apparently better off financially than the average pioneer settler, invested about $3,000 in the surveying, platting and development of the little settlement of Beldena, named for his family, in the southeastern part of section 9, on Deer Creek, in Spring Valley Township, and set about making improvements. A dam was thrown across the creek to secure water power, a blacksmith shop was opened, and other enterprises were initiated or planned. Attracted by the apparent advantages offered, a group of families moved to the village. The rivalry of nearby settlements was strong, however, the village never was recorded, and in a few years Beldena disappeared, except for the dam, which held until 1858, the pond which it had caused providing a favorite fishing place for the neighborhood. Beldena, like many another village, was begun in the hope and expectation that because of its excellent location on a stream and in the path of traffic the railroad would go through it, and the belief that it would

become a railway point kept this hope alive through a long period of discouragement. Relatives of Dr. Belden have in their possession letters which he wrote to his sister Harriet from Beldena in 1855 and 1856.

During this early period and for many years subsequently Dr. Belden followed his profession. During the Civil War he served as surgeon of the Sixth Minnesota Regiment of Volunteer Infantry, from September 20, 1864, when he was mustered in, to August 19, 1865. A letter which he wrote from Headquarters of the Regiment at Helena, Arkansas, on October 29, 1865, to Governor Stephen Miller, of Minnesota, concerning conditions of sanitation in the camp and measures taken to improve them, reflects a man of education, sense of responsibility and social obligation, and professional ability. His two brothers, Ira and Orpheus, the latter too young for military service, but so eager to follow the example of his brothers that he swore to eighteen years, enlisted at the same time as Dr. Belden.

Beginning in 1861, Dr. Belden was in Hamilton, where he owned his home, a large house superior to the average village residence of the day. In addition, as indicated by his name on a topographical map, he was the owner of a considerable tract of land on the outskirts of the village. In the early seventies he sold his home to Dr. Albert Plummer, who had settled in Hamilton in 1869. Dr. Plummer, himself an exceptionally well-trained physician of the regular school, has been quoted by his son, Dr. William A. Plummer, as saying that Dr. Belden was a good citizen and an able physician.

From 1870 for several years, among the professional cards published in *Western Progress,* the newspaper of Spring Valley, appeared the following notice: "W. P. Belden, Physician and Surgeon, Hamilton, Minnesota." For an unspecified and presumably brief period in the early seventies Dr. Belden lived in Rochester, Olmsted County, and while in that town became a member of the Minnesota State Medical Association. His name did not appear on the roster after 1874.

A statement signed by Wallace P. Belden, dated May 21, 1881, on file with his dossier at the Veterans Administration in Washington, gives concisely the places of his residence from 1861 to 1881, inclusive:

****

That during the three years immediately preceding my enlistment, upon the 24th day of August, 1864, I resided in the Village of Hamilton, Fillmore County, Minnesota, for about nine years, until December, 1874;

That I then removed to the Pacific Coast and resided in the Village of Hubbard, in Marion County, Oregon, from January, 1875, to May, 1878;

That I then removed to Canton, Jackson County, Iowa, and resided there from June, 1878, to March 1881;

That I then removed to Spring Valley, Fillmore County, Minnesota, where I now reside.

It was during the years spent in Oregon that Mrs. Belden died. When Dr. Belden returned to Fillmore County, to the village of Spring Valley, in 1881, he continued medical practice and established his offices in the Valley House, a hotel which he bought and placed under the management of his brother Orpheus. After his second marriage, about 1886, Dr. Belden and his wife operated the hotel. Orpheus G. Belden removed to Rochester.

Dr. Wallace P. Belden died in Spring Valley on July 9, 1889, in his fifty-ninth year, and was buried near his son in the Hamilton cemetery. He was survived by his wife and by relatives, including his two daughters and nieces and nephews. One of the nieces, Julia Belden (Mrs. Frank Metcalfe), daughter

of Orpheus G. Belden, made her home with her uncle for ten years, after his return in 1881 and during her early school days and girlhood. She has said that although Dr. Belden was spoken of in the community as an irritable and eccentric man, he always was very kind to his family and to her and that "for all his would-be hardness he was very softhearted."

Howard Bell, a graduate of the Medical Department of the University of New York City, in 1884, was licensed on March 10, 1885, to practice in the State of Minnesota, receiving certificate No. 1008 (R). At that time he was living in Lanesboro, Fillmore County. Little information concerning him has been available, and the length of his residence in the state is uncertain. It has been learned, however, that for a time in 1885 and into the spring of 1886 he was in partnership with Dr. F. A. Blackmer, in Albert Lea, Freeborn County, and that around 1888 he was briefly in Mower County. Judging from the evidence of official medical directories, he left Minnesota early in the nineties, perhaps sooner, and returned to the East. For many years, until his death, in 1923, he was in Delhi, New York.

J. G. Bemis, in the autumn of 1867 arrived in Farmington, Dakota County. In 1872 he was practicing medicine in Lanesboro and was listed in a commercial registry as a favorable business risk. His name has not been found in medical directories of the state. From March 26, 1872, to January 8, 1873, Dr. J. G. Be(e)mis was coroner of Fillmore County. In 1880, and obviously earlier, he was in Waterville, Le Sueur County, and in that period sent in a report on diphtheria to the State Board of Health.

A Dr. J. G. Bemis, born in 1844, a graduate of the Bennett College of Eclectic Medicine and Surgery of Chicago, in 1883, was licensed in Illinois in that year and well after the turn of the century was practicing in Chicago.

Karl O. Bendeke, a native of Norway, was born on April 21, 1841. In 1867, two years after his graduation from the medical school of the Fredericiana University at Christiania (Oslo), he came to the United States and shortly after his arrival matriculated at the Chicago Medical College. Graduated in 1869, he returned to Norway that year to be married to Josephine Fanske, of Bergen, and in 1870 he brought his wife to the village of Rushford, in Fillmore County. After several years of medical practice in which he won the respect and confidence of patients and of fellow physicians alike, in 1874 he removed with his family from Rushford to Minneapolis. His intention at this period had been to make a trip to Norway and, learning that Dr. Jacob Wright Magelssen, then of Wisconsin, was visiting his brother, The Reverend Kristen Magelssen, who was living at Highland Prairie, seven miles from Rushford, Dr. Bendeke drove over to see him, hoping to persuade him to take over temporarily the Rushford practice. As events developed, Dr. Bendeke decided to establish himself in Minneapolis and Dr. Magelssen so liked the village of Rushford that he brought his family there and remained for fifty-seven years.

Under the Medical Practice Act Dr. Bendeke on November 10, 1883, received state license No. 255 (R). On June 18, 1885, at the seventeenth annual meeting of the Minnesota State Medical Association, held in St. Paul, he became a member of the organization.

Dr. Bendeke remained in Minneapolis until his death, which occurred in the first week of January, 1906. In the following February, at a meeting of the Hennepin County Medical Society, of which Dr. Bendeke had been a valued member, Dr. Johan C. Hvoslef, of Lanesboro, one of his distinguished contemporaries in Fillmore County, as the guest of the society addressed the members in tribute to the life and character of Dr. Bendeke.

———**Bingham,** said to have been newly graduated from Rush Medical College, was the second physician, in approximately 1865-1867 (after G. M. Alsdurf), to settle in Le Roy, Mower County, where he was introduced by the Messrs. Coleman. In different accounts it was stated that from Le Roy he removed after a short time to Lanesboro, Fillmore County, where not long afterward he died from smallpox. This man may have been Dr. D. W. Bingham who was in Winona in 1865.

At the risk of confusing the issue by conjecture, the following data, from a history of Minnesota in the Civil War and the Indian Wars, concerning the military record of Dr. Reginald Bingham are added; understandably, but unfortunately for the sake of proof, the valuable aid of official bureaus in Washington in tracing and identifying is not so freely available in time of war as it is in time of peace. On July 24, 1861, Reginald Bingham was appointed surgeon of the Second Minnesota Regiment of Volunteer Infantry. Aged thirty-one years, he was mustered in on July 26, 1861, and was mustered out on May 27, 1862. On November 22, 1862, Reginald H. Bingham was mustered in as assistant surgeon of the First Regiment of Mounted Rangers; he resigned for promotion on May 7, 1863. On May 16, 1863, Reginald Bingham was mustered in as a surgeon of the Ninth Minnesota Regiment of Volunteer Infantry, and on August 24, 1865, was mustered out.

The *National Republican* of Preston, Fillmore County, on January 24, 1873, gave the following positive information:

> It is not true that the pauper at the poor farm, whose hand and foot have been amputated in consequence of freezing, came to his said calamity by going out in the great storm. He had been picked up in the woods in the Township of Norway in the latter part of December and turned over to the overseer of the poor to whom he refused to give any definite account of himself. The amputations were performed on New Year's Day by Dr. Wheat [of Lenora] assisted by Dr. Bingham.

And in another column: "We regret to learn of the death of Dr. Bingham, of Lanesboro, by smallpox. Three other cases are reported in that village today."

David A. S. Britts (the name has appeared in various forms and sometimes lacking the initial D) was for a few months in 1879, it has been said, assistant surgeon in the Lanesboro Sanitarium, an institution established not long previously and managed successfully by the well-known "White Beaver," Dr. David Frank Powell, of Lanesboro, Fillmore County.

Inasmuch as Dr. Britts, a resident of southern Minnesota since his boyhood, began his career as a medical practitioner in the village of Marion, Olmsted County, in the early seventies, a biographical record will be included in an account of early physicians of Olmsted County. His Lanesboro experience came during his last year of residence in Brownsdale, Mower County, where he had gone in the summer of 1876, and just before his removal to Clearwater, Wright County. Ultimately he became a resident of Minneapolis.

———**Burkaus**, according to the *Lanesboro Herald* of December 31, 1868, was the only physician in Lanesboro, and he was dealing at the time with numerous local cases of typhoid fever and other sickness. Another resident doctor, it was stated, was expected to arrive the following week; undoubtedly the newcomer was Dr. Luke Miller.

Charles William Cady, son of American parents and one of seven children, was born on September 17, 1847, at Saratoga Springs, New York. His father was The Reverend Edgar Cady, both farmer and Baptist clergyman; his

mother, Emma A. Edwards Cady, remembered by her granddaughter as "a very kind, good woman and a very hard worker." His brothers and sisters, all deceased (1941), were James, Eben, George, Harriet (Mrs. D. G. Frank), all of Medford, Minnesota, and Della (Mrs. Crossman) and Hobart, both of Owatonna, Minnesota.

The Reverend Mr. Cady, sent to Minnesota by the American Board of Missions in 1857, brought his family to Lake City, in Wabasha County, where he served for a few years, at the end of which he retired from the ministry and took up farming near Owatonna, in Steele County.

Charles William Cady received his early education in the schools of Lake City and Owatonna, and it was in this period of his life that there began and ended his brief but not inglorious military career. A mere lad when the Civil War began, he ran away to enlist, but the army rejected him because of his youth, and his father, active in obtaining the rejection, brought him home. At the age of seventeen years he went to Illinois, where he worked on a farm, taught country school and sold books, at the same time continuing his education. After these experiences he studied at the Chicago Theological Seminary, but by the end of six months he had decided on medicine as a profession and had entered on a course of reading under a preceptor, Dr. Eli M. Morehouse, an eclectic physician and surgeon of Owatonna. On completion of this grounding, Mr. Cady entered the Bennett College of Eclectic Medicine and Surgery in Chicago, from which he was graduated in February, 1877. Always a student, throughout his medical career he kept himself informed as to medical progress by reading the literature and by taking postgraduate work, the latter during three different periods at Rush Medical College in Chicago.

Although Dr. Cady long was a physician of Fillmore County, he first resided many years elsewhere in the region. He began his practice at Blooming Prairie, in Steele County, Minnesota, immediately after his graduation from medical school, but the location was not satisfactory, and when he heard of the need for a physician at Burr Oak, Iowa, he drove down to investigate and was so pleased with the place and the prospects that he stayed. With the exception of the months spent in postgraduate work and of a year in St. Joseph, Missouri, he lived and practiced in Burr Oak for fifteen years.

The beginning of his life in Burr Oak was not auspicious, for shortly after his arrival in the hamlet, a stranger in a strange town, as he said, he lost his only wealth, a twenty-dollar gold piece, and for a time he worked on neighboring farms for his board and room. An epidemic of diphtheria, in 1877, at Lenora, Canton Township, launched him on his professional work in Fillmore County, Minnesota. The disease was virulent, taking a toll of four and five members in some families. At the peak of the epidemic Dr. Cady was called to the home of a storekeeper in Lenora; the son had died, the daughter was in critical condition, the parents were exhausted, the mother so ill and discouraged that she had taken to her bed. Dr. Cady made the trip from Burr Oak to Lenora on horseback, took over the entire responsibility for the household, cleaning the house, doing the washing and cooking and caring for the sick child. The mother soon regained strength and hope and nursed the daughter back to health. The people of the stricken community turned to Dr. Cady; he remained with them, brought all his patients safely through, and from that time on he was a busy physician, so extending his practice that he often drove his horses forty miles in a day.

The doctor loved good horses, drove them with exceptional skill, and treated them well. At first possessing only a saddle horse, he later drove one horse to a

two-wheeled cart, later still had two horses and both a carriage and a cutter, and finally kept at least six horses in fit condition in his stable, so that a team that had traveled forty miles should have two days' rest before going on the road again. The equipment which he carried was like that of the physician in the picture by Hertzler, "The Horse and Buggy Doctor"; grips of medicine and instruments, shovel, hammer and other tools for repairing buggy and harness, and a soapstone. Those still were years of poor roads and lonely stretches of country and often to his hazardous trips, especially in the region of Bluffton, Iowa, the screaming of wildcats was a cheerless accompaniment. When automobiles first appeared, Dr. Cady, because of his love of horses, resented them, but gradually he became an enthusiast and owned several successive cars, the first a Ford runabout, and he continued to drive his own machine until after his eightieth birthday. Nor did he at first consider the telephone an unmixed blessing; it was the subject of a rather rueful joke in the family when on occasion it rang to cancel a professional call that Dr. Cady at some personal sacrific had arranged to make.

In 1892 Dr. Cady removed with his family from Burr Oak, Iowa, to Mabel, in Newburg Township, Fillmore County, Minnesota, a community in which he long had been a trusted physician, and there he began a medical practice which was to continue thirty-six years. Under changing conditions of medical licensure he had been licensed in Iowa in 1887, and he was licensed in Minnesota in 1898.

He was a skilled pharmacist, who dispensed all his own drugs, made tinctures from herbs and compounded his own ointments and pills until reliable manufactured preparations became available. Some of his former patients recall his magic "worm cure" and describe his remedies in general as "little white pellets over which various medicines were to be poured."

Devoted to his country practice, Dr. Cady refused the offer of a professorship at the Bennett Medical College of which he was a graduate. Trouble and difficulties he always met courageously. Although he was crippled badly as the result of a serious illness, he continued to visit his patients, even when he could guide his horses only by exerting pressure with his shoulders on the reins, which were secured around him, and when he had to be carried from his vehicle to the house. Always he gave his services generously, without descrimination as to the financial status of his patients; often he was not paid; sometimes he accepted wood and produce in return.

Interested in public health and sanitation, Dr. Cady served for many years as health officer in Mabel and as county physician in the village and Newburg and Preble Townships. He was an active worker in the Houston-Fillmore County Medical Society (formed in 1904), a member of the Southern Minnesota Medical Association and of the state and national medical associations, and was representative as well in civic life. He was an adherent of the Republican Party. He had been reared in the Baptist faith, but in the absence of a Baptist Church in Mabel he became a member and supporter of the Methodist Church.

Dr. Cady was married twice. His first wife was Elizabeth Turner, of Burr Oak, and of this marriage there were two children: Helen (Mrs. Elmer Stroud) and Charles V. Cady, both of Mabel. Some years after his wife's death, Dr. Cady was married to Mary Hiscock, of Coggen, Iowa.

On January 24, 1928, eighty-one years old, Dr. Cady died at his home from the infirmities of age, after a life of faithful and ethical service in the profession he loved. He was survived by his son and his daughter; Mrs. Cady had died four years previously.

The tributes paid him by the local newspaper, by close friends and by patients,

all of whom were his friends, were those which are given only to the humanitarian physician who has served well. From the paper: "Old timers will long carry a pleasant association of memories for Dr. Cady, attesting to his successful work as a doctor and signifying the fine esteem in which he was held as a citizen." From a friend of the family: "Your loss is our loss. Seldom is a man so beloved by every one as your father. His life was truly used, as I believe the Lord intended, in service of mankind."

George Elmore Campbell, who was to be for six years a representative physician of Fillmore County, was born on May 11, 1867, in Columbus, Wisconsin, the son of Frederick E. Campbell and Cornelia Miller Campbell. Both of them natives of Vermont, F. E. Campbell was born in Putney and Cornelia Miller in Westminister West. It has been said by one of her grandchildren that Mrs. Campbell belonged to a family of fourteen children, all of whom "had the wanderlust"; a brother, a true pioneer, who had left home for the West before she was born, first became known to her decades later in California, where he was the owner of a large orange grove. Mr. and Mrs. Campbell had two children: George Elmore and Henry, who died in 1868.

When George E. Campbell was a child of school age the family removed to Rochester, Minnesota, where they remained for many years. Here the boy grew up, numbering among the youths of his acquaintance Charles H. and William J. Mayo, Frank B. Kellogg and John Willis Baer, and here and in St. Charles continued his education, completing a high school course and receiving business training. In October, 1887, he was married to Alta E. Vine, of Viola, Minnesota, a native of Dunn County, Wisconsin, and a daughter of Mr. and Mrs. William Vine, who were early settlers of Olmsted County. For several years Mr. and Mrs. Campbell made their home in Rochester.

Belonging to a family which through many members was identified with the medical profession (Dr. Daniel Campbell was one of Vermont's most eminent surgeons), George Campbell was inclined to the study of medicine. For a time his medical work was postponed because his father, who had acquired large tracts of land, was anxious that he should try farming. He did as his father wished, but after a few years decided to become a physician; in 1895 he was graduated from the medical school of the University of Minnesota and in June of 1896, in Hennepin County, was licensed to practice in the state.

In 1896 Dr. Campbell moved with his family to Wykoff, in Fillmore Township, Fillmore County, where he applied himself with energy and intelligence to the practice of his profession. In this period, as throughout his life, he was progressive, both in professional and in civic activities. He identified himself with medical societies, local, county, state and national, read extensively and began early by travel and postgraduate study at home, and later abroad, to increase and improve his knowledge. In 1898 and again in 1900 he did postgraduate work at the Medical School of the University of Chicago, paying especial attention to general surgery and diseases of the eye, ear, nose, and throat. During his absence in 1900 Dr. Wendell B. Grinnell, newly graduated from the University of Chicago, carried on his practice for him; Dr. Grinnell later settled in Preston. Dr. Campbell while in Wykoff founded and for six years managed successfully his own excellent hospital. When he removed from the village, the hospital was taken over by Dr. Claud W. Woodruff who, shortly after graduation from Rush Medical College in June, 1901, had joined him in practice; four lears later Dr. Woodruff left Wykoff for Chatfield. Dr. Grinnell and Dr. Woodruff, both of whom have remained in Fillmore County, were two of the many younger

physicians who were associated with Dr. Campbell at different periods in his long professional career.

His arduous life as a country doctor began to affect his health adversely, and in the autumn of 1902 Dr. Campbell removed permanently with his family to Pasadena, California. In 1899, at the suggestion of his father, who had spent several winters on the Pacific Coast, he had obtained a license to practice medicine in California. Since 1900 he had been licensed to practice in Wisconsin also. At the time he left Wykoff he was serving a term of two years as coroner of Fillmore County.

In California Dr. Campbell continued in professional and civic life, practicing medicine, working in the local and state medical associations and supporting enterprises for the betterment of the community. He was a member of the staffs of the Huntington Memorial Hospital and of St. Luke's Hospital, was active in various fraternal orders, a member and supporter of the Presbyterian Church, and a member of the Board of Directors of the Pasadena Historical Society. His busy life left little time for hobbies as such. In the society of his family, to whom he was devoted, and in raising flowers in his beautiful garden, he had his greatest enjoyment and recreation. Mention may be made here of one of the numerous evidences of his sympathetic and generous nature, and that is the financial aid, known only after his death, which he gave to the poor, especially to those of his patients who were in need.

Dr. and Mrs. Campbell had three children. The eldest daughter, Nilva, died in Pasadena in 1905; the daughter, Avis, was married to Barnett Adkinson; the son, Dr. Leon G. Campbell, followed his father worthily in the medical profession. The Campbell grandchildren are Margaret Jane, Patricia Ann and Leon George, Jr.

Dr. George E. Campbell was fortunate in being able to carry on his work to the end of his life; he died suddenly on February 14, 1940, from coronary thrombosis, after a busy day spent at his office and in making hospital rounds. Mrs. Campbell survived, with the son and the daughter, and in 1943 continued to reside in the family home in Pasadena.

Temperate, ethical, kindly, a fine citizen, Dr. Campbell held the respect and esteem of his medical colleagues as a capable physician and surgon of the older school, and the love and trust of his patients as a family friend and physician.

S. M. Carr, said to have been an herb doctor, through the nineties and probably much earlier practiced medicine in the community of Pilot Mound, in Pilot Mound Township. His name was observed in a gazetteer and business directory only and could not be found in any medical directory available. An early resident of Fillmore County said (in 1943) that Dr. Carr "died forty years ago."

(To be continued in the October issue.)

President's Letter

Minnesota's 1946 Poliomyelitis Epidemic

INFANTILE paralysis began its epidemic appearance in Minnesota this year in June in north Minneapolis. In its earlier-than-usual appearance, in the steepness of the case-incidence gradient, and in its size, severity and mortality, the 1946 epidemic has differed from previous ones. There were an estimated 1,825 cases in 1909. Reported cases in 1925 were 955. Most frequently in previous epidemics the peak of case incidence has been around September 1. At the present moment (September 9), 2,034 cases have been reported among Minnesota residents.

As the epidemic spread in Minneapolis, Dr. F. J. Hill, Health Commissioner, with a special committee of which Dr. E. J. Huenekens and Dr. C. Gates were members, secured additional offers for the care of patients at the Minneapolis General Hospital, Sheltering Arms, Michael Dowling School and the Sister Kenny Institute.

By late July, the pattern of the epidemic spread over all of Minneapolis, and the radiation of cases throughout neighboring counties became apparent. By early August, many counties remote from the Twin Cities reported cases.

Many rural Minnesota patients were hospitalized at the University Hospitals. Mr. Ray Amberg, Superintendent, soon found that available beds there would be inadequate for the increasing number of rural cases.

Governor Thye called a meeting of representatives of the various official agencies, including Drs. A. J. Chesley, R. N. Barr and D. C. Fleming of the Minnesota Department of Health; Dr. Gaylord Anderson, Professor of Preventive Medicine and Public Health, University of Minnesota Medical School; Mr. Ray Amberg, Superintendent of the University of Minnesota Hospitals; Dr. F. J. Hill, Health Commissioner of Minneapolis; Dr. A. E. Nichols, representing Dr. R. B. J. Schoch, Health Officer of Saint Paul; Dr. Walter Bierring, Iowa State Health Commissioner; Dr. E. F. Warner, Medical Director of the U. S. Public Health Service; and the writer as representative of the Minnesota State Medical Association and the State Division of Social Welfare. At this meeting, definite plans were agreed upon for the future handling of various phases of the epidemic in rural Minnesota.

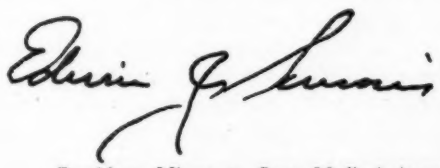
All physicians of the state were sent an outline of procedure as agreed upon at the meeting. All physicians were requested to notify the State Department of Health of any new case by collect telephone call or telegram. This information has been relayed by the Services for Crippled Children of the Division of Social Welfare to its field nurses and county public health nurses. Through these persons, both the attending physician and the patient's family are given any assistance needed in the hospitalization or handling of cases.

Mr. Carl Swanson, Director of the Division of Public Institutions, Dr. C. C. Chatterton and Miss E. McGregor, Chief of Staff and Superintendent, respectively, of Gillette State Hospital, immediately made available 40 beds, and later 100 beds for release of mild or convalescent cases from the University Hospitals. Dr. Ruth Boynton, Director of the University Students' Health Service, placed at the disposal of the University Hospitals 50 beds for such cases in the Agricultural Campus buildings.

With only 200 beds thus available for rural cases already numbering 585, physicians were requested to care for all mild, abortive or non-paralytic cases in rural or local hospitals. Patients insisting upon the Kenny method of treatment were requested to contact either the Minneapolis General Hospital or the Sister Kenny Institute directly.

The National Foundation for Infantile Paralysis has offered almost unlimited funds for services, equipment, medical care and hospitalization. The Farmer Magazine offered its Helping Hand Fund for the care of patients from farm families. The Children's Bureau in Washington has materially increased funds for care of such patients. Governor Thye has offered full co-operation of all state departments and additional funds if necessary.

The Services for Crippled Children of the Division of Social Welfare was named as the agency to co-ordinate public and private facilities during the epidemic. Its telephone number is Nestor 2651, Minneapolis, or Cedar 4721, Saint Paul, and its address is 610 Globe Building, Saint Paul. Anyone needing service or assistance is requested to contact this agency.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

MEDICAL EDUCATION AND MEDICAL PRACTICE

THE current as well as the traditional function of a medical school is the education of physicians for the practice of medicine. At times other activities, such as the advancement of medical science, particularly when this leads to important discoveries, may seem to overshadow this less spectacular primary function. In fact, the reputation and standing of a medical school are determined more by the scientific work of its faculty than by the quality of its teaching. Scientific work is more easily evaluated and more widely appreciated than is medical teaching.

This basis of evaluation is not necessarily wrong because scientific investigation and good medical education go hand in hand. This does not imply that good investigators are necessarily good teachers. Every medical graduate can cite numerous examples to the contrary. It does mean, however, that a progressive scientific interest and attitude on the part of a medical faculty is essential for a strong educational program. It is not sufficient that students be taught medicine as it is practiced today. It is even more important that they acquire a scientific attitude and interest which will insure a continuous increase in and enrichment of their medical knowledge.

Medical education is the foundation upon which medical practice is built. As such, it naturally must adjust itself to changes in practice. A quarter of a century ago specialization in medical practice was in its infancy and the body of scientific knowledge which a medical graduate needed to possess was far smaller than it is today.

With the development of specialization at the graduate or postgraduate level, the undergraduate medical curriculum has been devoted more and more to the basic principles and procedures of medical practice. For clinical instruction formal lectures and operative clinics have been replaced by clinical clerkships on which the student, under careful guidance and supervision, studies individual patients at the bedside and in the clinics. The result is that the medical graduate of today, although lacking proficiency in specialized techniques and procedures, has a much better foundation for general medical practice than did the graduate of a generation ago. At the University of Minnesota additional clinical preparation for practice is assured by the requirement that graduates complete at least a year of acceptable internship before receiving the degree of doctor of medicine.

During the war the University of Minnesota Medical School conducted an accelerated program in order to train physicians as rapidly as possible for service with the armed forces. This was the normal, not an abbreviated, medical curriculum. Acceleration was obtained by omitting the usual summer vacation.

With the end of the war transition from this accelerated curriculum to a medical course extending over four calendar years will be made but the transition will be gradual. Coincident with this change some revisions to improve and strengthen the medical curriculum are contemplated.

Education for medical practice is not finished when a student graduates from medical school but must continue throughout the lifetime of a physician. Realizing this, the University of Minnesota has been a leader in the development of postgraduate courses for practicing physicians. These courses which enable practicing physicians to keep abreast of the developments in medicine have been exceedingly valuable, popular and well attended. Since the termination of the war the program has been devoted primarily to the needs of physicians who are returning to the civilian practice after having served as medical officers with the armed forces.

One of the trends in medical practice which is under discussion and a certain amount of criticism at the present time is the increase in specialization and the establishment of standards for recognition as specialists in the various phases of medical practice. This subject provoked considerable discussion at an open forum conducted at the time of the recent meeting of the Minnesota State Medical Association. The problems which were the real basis of these discussions are

difficult ones. Increasing demands for specialized training raise questions as to the number of specialists which are needed in a state such as Minnesota and as to the provision of medical care for the general population, particularly in rural communities. Certification of specialists raises further questions as to the application of these standards to general practitioners of medicine.

The specialty boards have been established by the special societies and the corresponding sections of the American Medical Association. The standards for certification in turn have been formulated by the respective specialty boards. In providing graduate training in the various specialties, the Medical School, of course, attempts to meet the standards required for certification in order that its graduates may be accredited.

The acceptance of "certification" as a requirement for the practice of a specialty is the responsibility of governing boards of hospitals or of the agencies, federal, state, or local, responsible for the administration of medical care programs in which the services of specialists are utilized. For members of its own faculty the Medical School encourages but does not absolutely require "certification" by the respective boards.

Recently there has been a great increase in the requests from physicians for specialized training. A number of factors are responsible for this. Prior to the war the advantages of "certification" for those who wished to be known as specialists were becoming apparent. Then during the war, the recognition and special privileges accorded to specialists by the Army, the Navy, and the Veterans Administration greatly accelerated the demand for specialty training. In fact, the number of discharged medical officers requesting specialty training far exceeds the training opportunities available. To help meet these demands the University of Minnesota has expanded its opportunities for graduate training, particularly through affiliation with the Veterans Hospital in Minneapolis. This has more than doubled the training opportunities available for specialized training but, even so, only a fraction of those who desire and have earned the opportunities for graduate training can be accommodated.

For this increased interest in specialty training the Medical School cannot be held responsible. It has been said that the medical faculty urges undergraduate students to become specialists. This is incorrect. The medical faculty is well aware that the need of the public is primarily for "family physicians." With this in mind the medical curriculum emphasizes those aspects of medicine which are of greatest importance to physicians practicing in smaller communities.

Concerning general practice the senior medical students are told in a course entitled Orientation to Practice:

"General practice offers the advantage of a quicker start, of a more varied experience, and of less overhead expense. There is a tremendous satisfaction in feeling that one belongs to the various families under his care as a sort of honorary member, and of sharing in their joys and sorrows as does no specialist. And though the general practitioner may not have the delight in knowing that he is the master of one branch of medicine, he yet has the satisfaction that comes from the ability to view the body as a whole rather than in sections." (Dr. Wingate M. Johnson)

"A new sort of clientele is emerging for the doctor of the future that will call for all the social and intellectual adaptability at his command. In this new order of society there is a call for a different type of family doctor or general practitioner than was required a generation ago. Although of somewhat different mold he will be the central figure in the field of medical practice as in the ages past. He is the basic doctor of tomorrow and of the new order. . . . He will approach medicine with a broad cultural training in the natural sciences and in humanities so that he can read aright the faults of heredity and the laws of eugenics, to interpret more readily the problems underlying the biologic. . . . By reason of his broad medical training he will be perfectly competent to take care of 85 per cent of general medical practice, aside from being equally competent to know when, where, and how to seek advice in the other 15 per cent." (From Dr. Walter L. Bearing's address as President of the American Medical Association)

The University of Minnesota has today a Medical School of which the citizens and particularly the physicians of the state can be justifiably proud. Its faculty is among the best in the nation, its student body carefully selected and of distinctly superior ability, its facilities basically sound and in the process of expansion; and, above all, its alumni practice a quality of medicine which reflects credit upon the school which gave them their training. This institution stands ready at

all times to co-operate with the physicians of the state in meeting the problems which will continue to confront medicine in a "changing order."

HAROLD S. DIEHL
Dean of the University of Minnesota Medical School

TOO MANY SPECIALISTS

THERE are some 180,000 licensed physicians in the United States. Of these about 125,000 are members of the American Medical Association. On March 1, 1946, 26,108 had been certified as specialists by the fifteen specialty and four subspecialty boards. In 1939 some 4,000 had been certified. Thus on an average over 3,000 have been certified yearly since 1939 in spite of the war. This figure of 26,108 indicates only certified speclialists and does not include the thousands who claim to be specialists but who have not taken the necessary steps to become certified. A survey indicated that some 12,000 physicians in the armed forces planned to seek certification. As the certification of younger physicians requires three to five years, following internship, of postgraduate work as residents in hospitals, the demand for residencies has been greater than the supply, even though the number of hospitals approved for residencies has been increased. At the beginning of the war there were 5,256 approved residencies. They now number 8,930, not including those in the army and navy hospitals and those of the Veterans Administration. It is estimated that the available residencies constitute about 77 per cent of the present need. It would seem a conservative estimate that 10,000 to 15,000 will be added in the next five years to the 26,000 now certified.

We heartily approve of the certification of specialists by specialty boards. Requiring physicians to meet certain professional requirements before they are entitled to be classified as specialists is only right and proper, and serves as a protection to the public. The question arises whether the specialist has not been too greatly magnified in the eyes of the laity and medical profession alike, so that we shall before long have too many specialists for the best interests of both the laity and the profession.

It is estimated that 85 per cent of ills can be well taken care of by general practitioners. If this is so, the percentage of specialists should not be much more than 15 per cent of practicing physicians. It would seem, therefore, that we are headed in the near future for an overproduction of specialists.

An oversupply of specialists will have its economic repercussions. It means more expensive medical care and cut-throat competition between specialists. This will not be beneficial for medical practice. It will encourage unnecessary medical care and further concentration of physicians in larger centers of population. After investing a minimum of ten to twelve years and thousands of dollars in preparing for their vocation as specialists, many are doomed to disappointment.

It has long been recognized that a few years of general practice serve as a good preparation for specialization. The general practitioner acquires a better realization of the many factors, psychic, economic and otherwise, which so often result in functional disturbances in patients. The physician whose entire training is limited to the hospital is too likely to be overimpressed with laboratory medicine and forget the patient is a human being. Specialists who have had a few years in general practice will attest to its value. It would be well if some shorter period of training for specialization could be devised for those who have had the experience of general practice.

Today, as in the past, the medical graduate has a much better chance of earning a competent livelihood from a start in general practice than in a specialty. Many, after a few years in general practice, choose to remain general practitioners.

For the good of medical practice in general, every encouragement should be given recent graduates to enter general practice and no discouragement such as discrimination against them by hospitals should be tolerated. It is good to learn that the University of Minnesota Medical School is encouraging recent graduates to enter general practice, as stated by Dean Diehl in his editorial which appears in this issue.

PROGRESS IN THE CHILD HEALTH SERVICES STUDY

RECENT issues of MINNESOTA MEDICINE have announced the conduct in this state of a Study of Child Health Services as part of a nation-wide survey established by the American Academy of Pediatrics. The study in Minnesota is sponsored by the State Medical Association

which has the support of the State Dental Association and the Northwestern Pediatric Society whose membership has special duties in the survey. At the request of these agencies, the Minnesota Department of Health established an office for the actual work of the study and now reports on the progress made. The information is dated August 15, 1946, and is summarized below for the four activities of medical, dental and hospital care and public health services.

The dental care survey was begun immediately after the announcement of the study late in May and is now nearing completion. The information was obtained from practicing dentists in three district dental societies through personal visits by a Minnesota Department of Health staff member. In the remainder of the state the dentists were mailed a questionnaire. Already, 1,335 dentists, or 70 per cent of the approximate 1,890 practicing dentists, have completed the questionnaires. This result compares more than favorably with that obtained in North Carolina where the American Academy of Pediatrics tested the method of this survey.

The plan for the collection of the medical care information includes the mailing of a questionnaire to the physicians in each local medical society after a meeting at which a Minnesota pediatrician discusses the purpose and method of the study. This meeting has been held by the St. Louis, Southwestern Minnesota, Clay-Becker and Olmsted-Houston-Fillmore-Dodge County Societies. Meetings are also scheduled in late August and early September by the East Central Minnesota, West Central Minnesota, Waseca, Kandiyohi-Swift-Meeker and Red River Valley Societies. It is hoped that these meetings will all be completed early this fall, and society secretaries who have not made arrangements may immediately contact Mr. R. R. Rosell, executive secretary, Minnesota State Medical Association, to make arrangements for the appearance of a pediatrician before their groups.

Every physician will be sent a one-page questionnaire, except pediatricians, who will receive a special two-page questionnaire. The questionnaire is to be completed by every physician engaged in private practice. A physician not in private practice is asked to indicate that fact and give his name and address on the questionnaire and return it to the study office.

The hospital services section of this study was integrated with the state-wide hospital survey being conducted under the supervision of Governor Edward J. Thye's committee. Questionnaires were distributed to 264 general and specialized hospitals. Seventy-four institutions have returned the completed questionnaire. The study of public health services whether under public or private auspices is under way.

The purpose of this study is to obtain accurate information for the evaluation of existing health services for children and for the use of physicians and dentists, in systematic planning for adequate care for children throughout the state. Its success will depend on the co-operation of every physician, dentist, hospital and public health agency. The Minnesota dentists have already established an enviable record in completing these questionnaires which the physicians, hospitals and health agencies will have to work hard to equal.

ROLAND E. NUTTING, M.D.
Minnesota State Chairman
American Academy of Pediatrics

CONSUMER CONTROLLED MEDICAL SERVICE

THE "co-op" movement is well established in the north central states, at least in Michigan, Wisconsin and Minnesota. A well-attended conference was held recently in Two Harbors, where a local co-op group has already taken over the ownership and management of the community hospital formerly owned by local doctors practicing in Two Harbors. For many years this hospital had provided medical and hospital care for the railroads, the ore docks and the machine shops, incidental to the handling of large amounts of iron ore trans-shipped down the Lakes from the northern Minnesota iron mines. The Two Harbors hospital, while giving this primary service on an industrial basis, has always provided facilities for all the people living in the community and on adjacent farms.

This local experiment in a co-op owned and managed hospital has developed into a plan to provide medical service as well. It is contemplated, it is said, to employ as many doctors (some as specialists) as needed, and thus to make the entire medical and hospital service a "consumer directed" enterprise. The meeting of delegates from Canada and the United States, similarly interested in consumer plans for medical

service, brought to Two Harbors some two hundred delegates. Some of the program was broadcast over the usual networks, and from the technical standpoint the meetings were newsworthy and were accorded "a very good press." Among the speakers of national note was Professor Haven Emerson of New York City and Columbia University. His many friends and those acquainted with his judicious and fearless appeals for better public health service need have no concern lest he may have lent his force, judiciousness and understanding to the support of issues outside the pale or opinion presently obtaining within our own councils and representing our goals and ideals. Suffice it to say that he gave them some very forthright advice about medical and hospital service, and it was by no means a reflection of Leftist political and economic diversion or opinion challenging almost every feature of our present social organization.

The purpose of this editorial is not to weigh the evidence or comment upon what this meeting connotes in terms of future developments. It is offered because of the request made by Professor Emerson that some attempt be made to lay the foundation for a better understanding with groups such as were represented at Two Harbors. The violent criticism directed towards our profession and its society plans was far beyond what Professor Emerson thought could arise anywhere. Most of those speaking before this conference seemed to see nothing good in anything we are doing or planning, including our own prepayment medical plan; nor were they any more favorably inclined towards Wagner-Murray-Dingellism at the Federal level. The co-op group bitterly resented the efforts of our state medical legislative committees in furthering the bill before the last state legislature enabling us to develop a prepayment medical service plan sponsored and controlled by our profession. The co-op regional publications at that time lent all possible opposition at every turn. Many among our profession might accept their attitudes and recriminations, and virtually intimate that they should be allowed to blow off their steam and get rid of their gripes. This is not quite a Christian attitude to offer against those who "trespass" and obviously misunderstand. It is to be hoped that our own positive plans may be expedited, and that we may continue to demonstrate that as producers of service we are strictly imbued with the "best interests of the consumer," just as much, in fact, as are the purveyors and manufacturers of everything the public needs and desires in building up orderly living and comfortable existence. But ours must be a positive stand and not a passive reliance upon the accumulated prestige of past performance.

E.L.T.

Having thus disposed somewhat summarily of Compulsory Health Insurance, and agreed that our old and proven fee-for-service system of giving medical care is no longer capable of adaptation to our modern social-economic milieu, we have remaining to us the consideration of voluntary health insurance. It is my sincere belief that, given reasonable time, and freedom from governmental regulation and bureaucratic red-tape, voluntary health insurance can and will give more medical care, and much better medical care to more people than can ever be cared for under a regimented socialistic plan of national health insurance. It is quite true that thus far a not too impressive total of people are covered under such plans; that the coverage offered is not ideal and, that in general, voluntary plans cannot yet claim to have answered the problem. It is equally true that the American republic evolved by trial and error; that its early history portended failure and disaster, and that evolution is a much slower and less dramatic process than revolution, but that the evolutionary product is likely to be a better and sounder one than that which results from revolution. In a field in which there is only a meager amount of actuarial knowledge and a minimum of experience, haste must be made slowly, and this is no less true of compulsory than of voluntary health insurance. In a relatively short time, voluntary health plans have made astounding progress, and these plans are in their merest infancy. They offer good medical care, at prices that people can afford, and they give this care without bureaucracy or regimentation, in keeping with our American traditions and without offense to our American dignity. If seventy-one million Americans can be persuaded, without any element of compulsion, to buy life insurance, what reason is there to believe that they will not buy health insurance? And if they will not, will not this be convincing evidence that they do not wish to provide themselves, or to be provided with, prepaid medical care? And are we not still free men, and cannot we decide these things for ourselves, without paternal compulsion from an all-wise government?

Gentlemen: On the answer to these questions hangs not only the future of Medicine, but the future of America, the America in which we were reared. Liberty and its concomitant obligation to care for one's self is being weighed against alleged security and the inevitable loss of our freedom. Which we shall have is in our hands, and in the hands of our fellow Americans. Destiny awaits just around the corner, but destiny may still be altered by our will.—From "The Public Health, the Politician, and the Doctor," an address by Lowell S. Goin, M.D., F.A.C.R., presented at the Conference of Presidents and Other Officers of State Medical Associations, San Francisco, June 30, 1946.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COMMITTEE URGES ACTION ON FINANCING MEDICAL SERVICE

The Committee on Organization for Minnesota Medical Service on July 26 sent out a letter with a prospectus and pledge, asking the membership to co-operate in the financing of a Medical Service Plan for Minnesota. This material was sent out by the Committee, at the request of the House of Delegates, in order to inform Minnesota physicians fully as to the steps that the Committee had taken in the setting up of Minnesota Medical Service and as to the extent of its development to date.

The House of Delegates had also instructed the Committee to raise $100,000 before any further steps could be taken toward putting Minnesota Medical Service into actual operation; and so with the prospectus was sent a pledge asking for your co-operation. To date (August 19) there have been received only 225 pledges, totalling $31,050. These results, the Committee feels, are somewhat disappointing; and the Committee requests that those physicians who are planning to participate in the financing of Minnesota Medical Service kindly sign their pledges and send them in immediately.

Word has reached the Committee that some doctors are still confused as to the type of plan formally adopted. It wishes to point out that the plan adopted by the House of Delegates operates both as a service plan and as an indemnity plan, depending on the income of the subscriber. For those individuals who are in the lower income brackets, the physician agrees to provide the necessary surgical and medical care as stipulated in the contract. For that group of individuals whose income is over and above a certain amount, the physician charges his usual fee, and will receive from the organization the amount specified on the contract. The balance of his fee will be secured from the subscriber. In the higher income bracket, the organization has nothing to do with the establishment of fees.

At the present time the income figure which will serve as the dividing line between higher and lower income groups has not been set by the Committee, nor have the fees been established for the contract. When these details have been worked out, they will, of course, be submitted to the House of Delegates before any final action is taken.

MSMA DRAFTS OFFICIAL STATEMENT ON WAGNER-MURRAY-DINGELL BILL

The impossibility of having a representative of the Minnesota State Medical Association testify at the hearings on the Wagner-Murray-Dingell Bill conducted in Washington by the Senate Committee on Education and Labor has made it necessary for the Council to find an effective way to make known the official stand of Minnesota physicians on the measure to the Committee members.

The Council appointed Dr. M. M. Weaver and Dr. W. A. Coventry, who were to have represented the Association in Washington, to draft a comprehensive statement of the Association's views on S-1606. The statement when completed was submitted to the Council for its approval. This approval has now been given, and a letter containing the statement will be sent to each of the members of the Committee on Education and Labor.

The statement embodies both the approval of certain portions of the Wagner-Murray-Dingell Bill and the rejection of others. It crystallizes the reasons why the Association cannot sanction the use of compulsion as indicated in the bill, it endeavors to offer its own positive suggestions as alternatives and it also recognizes the fact that certain of the bill's provisions may prove effective aids in the solution of many problems in

the field of public health, hitherto unsolved. Here is the statement as approved by the Council:

Favors Well-Considered Legislation

"The Minnesota State Medical Association is in favor of well-considered legislation which will benefit the health of the citizens of this state. It subscribes to the belief that adequate medical care should be available to all persons, regardless of race, color, financial status or place of residence. Such care should include the preventive, diagnostic and curative professional services which constitute modern, high quality medical care.

"The Minnesota State Medical Association believes that the attainment of this objective, insofar as it has not already been attained, should enlist the wholehearted support and enthusiasm of all concerned in the project: the doctors themselves, dentists, nurses, hospital administrators, all others who have to do with the care of the sick or with the conservation of health, and the public which receives health service.

"The Minnesota State Medical Association has examined Senate Bill 1606 in order to determine how effectively and satisfactorily its various proposals might bring about the improved medical care and other benefits to health which are the objectives of the proposed legislation."

Urgency of Some Provisions Noted

"The Association recognizes the timeliness and urgency of some of the provisions of this bill. It is glad to give its support to those portions of the bill which, if enacted into law, may solve certain problems that have proved difficult of solution. The Association gladly will join with lay and professional groups to recommend the proper implementation of governmental agencies seeking progress in the fields of public health, the medical care of the indigent and the adequate support of scientific research.

"With regard to part A of title one of Senate Bill 1606, the Minnesota State Medical Association believes that an extended program of disease prevention should be fostered at national, state and local levels. This should include all necessary federal aid to provide public health facilities and programs in communities at present inadequately supplied or not supplied at all. The plan to use federal funds to develop a more sanitary environment for our citizens should include the training of personnel to carry on the necessary program. However, the Association firmly believes that these activities should be under local control in conformity with standards as high as levels of intelligence, facilities for communication and so forth, within each locality will permit."

Evaluates Maternal and Child Health Provisions

"The objectives of part B of title one, namely, to enable each state to provide and maintain services and facilities for promoting the physical and mental health of mothers and children are considered by the Association to be most worthy of its support. But the Association favors federal grants-in-aid for the continuance and enlargement of the present Emergency Maternal and Infant Care program only as the need may be shown. It favors administration under the direction of the U. S. Public Health Service of the funds which may be made available for this purpose, in accordance with the policies and principles sponsored and approved by the State and Territorial Health Officers Association. Moreover, when a federal department of health is established, the program contemplated by Senate Bill 1606 should be provided within the federal department of health.

"The provisions of part C of title one for a medical care program for needy individuals through federal grants-in-aid to the several states fails to meet with the approval of the Association with regard to:

"(1) The payment to patients of cash benefits for medical care. The Association favors the provision of hospitalization and medical care to the indigent by local authorities with federal grants-in-aid administered, as need requires such aid, by a state administering agency. Local public authorities could make use of voluntary hospital and sickness insurance plans with more effective and economical results than could be obtained by distributing cash payments.

"(2) The allocation of funds for the health care of needy individuals by the Social Security Board. The Association favors the administration of grants-in-aid in this category by the U. S. Public Health Service, in accordance with practices and principles determined by the State and Territorial Health Officers Association, with final disbursement by a proper state agency. The administration of this program at the national level should rest with the federal department of health when this department is established."

Government Urged to Aid Research

"With regard to title two of Senate Bill 1606, the Minnesota State Medical Association wishes to endorse in principle the participation, through grants-in-aid, by the federal government in a program to encourage research leading to further conquest of illness, disability and premature death. However, these objectives are more adequately stated, and more detailed consideration of the financing of a program for medical education and research are incorporated in 'other legislation' which is before Congress at this time.

"With respect to the remainder of title two of this bill, which has to do with compulsory health insurance designated as Prepaid Personal Health Service Benefits, the Minnesota State Medical Association cannot endorse such compulsory health insurance. The Association believes that payment for his medical care is the direct responsibility of the individual whether he is able to make this payment either directly or on a prepayment basis. Although the Association is convinced that application of the insurance principle is the most effective method of obtaining the financial participation of the majority of the public in a program of improved medical care, it is also convinced that participation of the citizens of the State of Minnesota in any health insurance plan should be on a voluntary basis. This conviction, by

the way, springs from a sincere solicitude for the national welfare and not for the financial welfare of the medical profession, as will appear below."

Advocates "Evolutionary" Processes

"The Association believes that the attainment of prepaid medical coverage for the citizens of this state must be an evoluntionary process and that it will require time. It believes that the interests of the public will be served best by encouraging this evolutionary process rather than by resorting to large-scale intervention by the government. The increase, in a few years, of voluntary prepaid hospital insurance in Minnesota encourages the Association to believe that the citizens of Minnesota can and will obtain the medical coverage they need on a voluntary basis when they are given the opportunity.

"The cost of voluntary health or sickness insurance never has been shown to be greater to the individual, amount and quality of benefits considered, than has been the cost of governmentally administered insurance for the same purpose. Furthermore, the Association is sure that it would be impossible to provide the quality of medical services which the citizens themselves desire and to which most of them already are accustomed if a governmentally-administered plan should be inaugurated.

"In summary: The Minnesota State Medical Association is opposed to the passage of Senate Bill 1606. At the same time, the Association voices its approval of the principles embodied in parts A, B, and C of title one, except as has been noted, and approves in principle the proposal that federal grants-in-aid shall be made available for the support of medical research."

"U" POSTGRADUATE PSYCHIATRY COURSE GETS NATIONAL ACCLAIM

An experimental postgraduate course in psychotherapy for the general practitioner held last April at the University of Minnesota was recently given national recognition by the Commonwealth Fund, New York. In a special report, released to medical societies, medical schools and public organizations throughout the nation, the course was acclaimed as valuable to the future teaching of the part played by personality in the treatment of physical ills.

The Commonwealth Fund report described the course as a meeting of 25 physicians for two weeks of intensive lectures, seminars and clinical sessions to seek answers to the following questions:

"Can doctors be taught to practice in their own offices the kind of medicine psychoneurotic patients need? Can they learn to use in all their practice the gist of what modern psychiatry has to say about human personality and the way it works? Can they get some idea of what comprehensive medicine means?"

Included in the teaching staff with prominent authorities in the field were several younger psychiatrists, many of whom had the benefit of recent war service and were ready to share their lessons in psychiatric rehabilitation with the men in general practice.

Among the immediate results of the course, according to the report, were the recognition of "new possibilities in the general practice of medicine . . . and a conviction on the part of most of the students that their usefulness and morale as physicians had been strengthened.

Tribute was paid to Dr. William A. O'Brien, University director of postgraduate medical education, for his part in making the course a success.

CONFERENCE STUDIES NATIONAL FEDERATION OF HEALTH PLANS

Two Harbors, Minnesota, was host August 15-18 to a national conference of co-operative health groups. This conference was held for the purpose of setting up a national federation of health plans and taking an official stand on national health plans that might be developed by the federal government.

Leaders in the movement who took an active part in the proceedings of the conference were Dr. Michael Shadid, founder-director of the Elk City, Oklahoma, community hospital; Dr. Elmer Richman, director of the St. Louis, Missouri, labor health institute, and Dr. Kingsley Roberts, director of Medical Administration Service, Inc., New York City.

Representatives of the American Medical Association and the Wisconsin and Minnesota State Medical Associations were present at the meetings merely as observers, taking no active part in the discussions. A résumé of what took place at the conference will be given in greater detail in the next issue of MINNESOTA MEDICINE.

All the strength and force of man comes from his faith in things unseen. He who believes is strong; he who doubts is weak. Strong convictions precede great actions.—*J. F. Clarke.*

Minneapolis Surgical Society

Stated Meeting Held April 4, 1946

The President, Robert F. McGandy, M.D., in the chair

INTRA-ARTERIAL PENICILLIN THERAPY FOR INFECTIONS OF THE EXTREMITIES

J. ORDIE SHAFFER, M.D.
Minneapolis, Minnesota

Since the advent of the anti-biotics, it has been possible to manage infections much more successfully and with less attendant difficulty. Penicillin has been demonstrated to be effective against most strains of three of the most common causes of surgical infections: the hemolytic streptococcus, staphylococcus aureus, and the clostridium welchii. The problem is complicated, however, by the fact that although a penicillin level may be attained in the serum which will inhibit the causative organisms, in a local lesion the impermeability of the wall of the abscess cavity may exclude the penicillin from the local area and prevent successful therapy. The problem, therefore, resolves itself into methods of getting the penicillin into the involved area so that it can be effective. The failure of penicillin in a local infection when administered by the intramuscular or intravenous routes has been repeatedly demonstrated. Thus penicillin must be given within the pleural cavity in an empyema to be effective since penicillin is not able to penetrate the local tissue barrier presented by the pleura. Within the last year several cases of purulent pericarditis have been reported which were resistant to intramuscular penicillin but responded well to local penicillin injected within the pericardial cavity. Thus normal tissue barriers may prevent intravenous or intramuscularly administered penicillin from being effective. In other cases involvement of a large area separated by numerous fascial and bony pockets such as in diabetic gangrene prevents the local use of penicillin and some other means of obtaining a high local concentration is desired. This is well met in the extremities by the intra-arterial administration of pencillin which provides a higher local concentration than obtainable by the intravenous or intramuscular methods. The use of this method dates back to 1914 when Heddaus in Germany injected anti-tetanic serum into the carotid arteries to obtain a higher local concentration within the cerebral tissues. Goyannes in Spain injected a cyanate solution into the arteries of the extremities for tuberculous joints. The method has been used periodically since then and during recent years has been popularized by Dos Santos of Portugal. E. Brancho Ribeiro of Brazil was the first to give intra-arterial penicillin. He had also used sulfonamides intra-arterially with success and noted the course of the infection was markedly speeded up by this method. He predicted the same for penicillin and this has subsequently proven true. Glasser and his associates gave intra-arterial penicillin using the stasis technique of Dos Santos in which a blood pressure cuff placed proximally on the extremity is inflated to 280 mm. Hg. following the intra-arterial injection. He had good results in these cases.

At the University Hospital the following technique of intra-arterial injection has been used in the treatment of thirty odd cases. An empirical dosage of 50,000 units of penicillin in 10 c.c. of normal saline is used in all cases. A 20 c.c. syringe with a 2-inch No. 20 needle is used for injection. A blood pressure cuff is placed just above the knee or elbow and the cuff pumped to 60 to 80 mm. of Hg. prior to starting the injection. With the physician standing at the right side of the patient, the point of maximum pulsation of the femoral artery is located just below the inguinal ligament. The artery is then stabilized with the index and middle fingers of the left hand and the needle entered through the skin in a plane perpendicular with the thigh. The needle is advanced until a bright red pulsating stream of blood is noted in the syringe and the penicillin is then injected at a rate of 1 c.c. per second. Pressure is maintained over the area of infection for a few seconds immediately after withdrawal of the needle to obviate any possible hematoma formation. The cuff is maintained at 60 to 80 mm. of mercury for ten minutes, during which time the venous return is occluded and the propulsive force of the arterial blood forces the penicillin into the tissues. However, when procaine (novocaine) and penicillin are given intra-arterially for anesthesia, the cuff is pumped to 280 mm. Hg. following the injection for hemostasis during the subsequent operative procedure.

As additional adjuvant measures in gangrenous extremities, 1 grain of papaverine is given hypodermically twenty minutes prior to each injection to aid in the vasodilatation and 1 to 9,000 potassium permangate foot soaks are used during this interval prior to injection to aid in cleansing up the skin and to facilitate drainage.

Intra-arterial penicillin speeds up the course of infection in the extremities and shortens the recovery period as compared to therapy by intravenous or intramuscular penicillin. The following case illustrates this point:

Case 1.—A 50-year-old chronic alcoholic was admitted to the University Hospital with a cellulitis of the feet with multiple ulcerations (Fig. 1). Culture of the exudate revealed hemolytic streptococci present. The patient was not running a septic course, however, so he was treated by conservative measures including bedrest and a high caloric, high vitamin diet for three days to evaluate the course of the infection. Little improvemen in the cellulitis occurred during this interval, so two intra-arterial injections of 50,000 units of penicillin each were given

with the cuff pumped to 80 mm. Hg. before and for 10 minutes following each injection. Within forty-eight hours the cellulitis had completely disappeared, illustrating the rapid subsidence of infection which occurs with this method of therapy (Fig. 2).

Fig. 1. *(above)* Streptococci cellulitis with ulcerations of feet present in Case 1 after three days of conservative therapy.

Fig. 2. *(below)* Streptococci cellulitis absent within forty-eight hours after two intra-arterial penicillin injections.

Chronic ulcers which were resistant to various other forms of therapy responded well to intra-arterial penicillin. Topical application of medicaments frequently fails because of poor penetration into the area. Intravenous or intramuscular penicillin also frequently fails because of the same reason. The intra-arterial method of administration of penicillin more adequately overcomes the obstacles of brawny induration and poor vascularity as the concentrated penicillin is forced into the tissues by the propulsive arterial force. Thus, it is possible to prepare varicose ulcers for skin grafting in a short interval by this method.

Case 2.—A sixty-five-year-old woman was admitted to the University Hospital last week with large ulcerations of the right lower leg (Fig. 3). Cultures revealed coagulase positive staphylococci present. The ulcers were debrided using intra-arterial procaine-penicillin anesthesia. Twenty-five c.c. of 2 per cent procaine solution with 50,000 units of penicillin added was injected into the right femoral artery and a blood pressure cuff placed proximally just above the knee inflated to a pressure of 280 mm. of mercury immediately after the injection. The patient had no pain or discomfort during the procedure. Thus anesthesia, chemotherapy, and hemostasis were all accomplished at the same time by this procedure. Subsequently, the patient received daily intra-arterial penicillin injections for four days with the blood pressure cuff pumped to 80 mm. Hg. before and for 10 minutes following the injection. At present a clean granulating base is present and the ulcer is ready for skin grafting (Fig. 4).

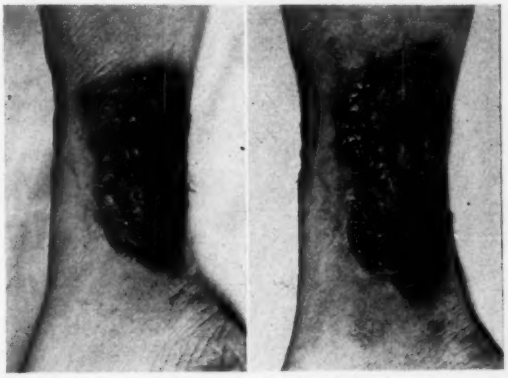


Fig. 3. *(left)* Gangrenous ulcerations of left lower leg in Case 2 prior to therapy.

Fig. 4. *(right)* Clean non-infected ulcerations present after debridement and intra-arterial penicillin therapy.

Case 3.—A seventy-six-year-old man was admitted to the University Hospital with infected gangrenous ulcerations over the dorsal lateral half of the left foot and the left lateral malleolus which developed after his right foot had been run over by an automobile. X-ray revealed no fractures, but an osteomyelitis was present in the distal and middle phalanges of the left fifth toe. Cultures of the gangrenous areas revealed hemolytic streptococci, coagulase positive staphylococci, and proteus to be present. The areas were debrided painlessly after intra-arterial procaine-penicillin anesthesia had been given, injecting 25 c.c. of 2 per cent procaine with 50,000 units of penicillin added and then pumping the proximally placed cuff to 280 mm. of mercury. All cellulitis had disappeared and no infection was present in the base of the ulcers twenty-four hours later (Fig. 6). An additional intra-arterial injection of penicillin was given on each of the next two days and split-thickness skin grafts placed over the area and a plaster cast applied on the third day. Two intra-arterial injections were given during the first two postoperative days and 95 per cent of the upper graft and 80 per cent of the lower graft took (Fig. 7). At present the foot has almost completely epithelialized. This case illustrates the usefulness of intra-arterial procaine-penicillin which permits a debridement without discomfort and acts later in the effective chemotherapeutic control of infection, permitting successful skin grafting on an infected gangrenous area within a few days.

Gangrene with associated infection due to frostbite responds very well to intra-arterial penicillin therapy. The gangrene in these cases is usually superficial and the deep vessels are intact, so the control of infection allows a more conservative demarcation of tissue.

Case 4.—A fifty-one-year-old man was admitted to the University Hospital with an infected wet gangrene and cellulitis of the distal half of the right foot resultant

Fig. 5. *(upper)* Infected gangrenous ulcerations and cellulitis of foot of Case 3 prior to therapy.

Fig. 6. *(center)* No evidence of cellulitis and infection after twenty-four hours of therapy in Case 3.

Fig. 7. *(lower)* Condition of foot in Case 3 with skin grafts taken after eight days of therapy.

Fig. 8. (*left*) Wet gangrene and cellulitis of foot in Case 4.

Fig. 9. (*center*) Foot in Case 4 after disarticulation and conservative debridement.

Fig. 10. (*right*) Stump in Case 4 almost epithelialized.

from frostbite three weeks previously (Fig. 8). Cultures revealed hemolytic streptococci and proteus to be present. Fortunately, the other three extremities had only mild changes. He was given four intra-arterial penicillin injections together with papaverine and foot soaks over eleven days and the infection was controlled and an area of dry gangrene demarcated. Intra-arterial procaine-penicillin anesthesia was used giving 25 c.c. of 2 per cent procaine with 50,000 units of penicillin added, and subsequently pumping the blood pressure cuff to 280 mm. of mercury. A disarticulation of the interphalangeal joint of the great toe and at the distal interphalangeal joint of the second and third toes was performed without any pain or discomfort to the patient (Fig. 9). Two more intra-arterial injections were given over five days and the distal half of the protruding phalangeal bones then amputated under intra-arterial procaine-penicillin anesthesia. Two days later, pinch grafts were applied over the stump, and ten days later the stump was almost epithelialized (Fig. 10). Thus by the control of infection through the use of intra-arterial penicillin, it was possible to save a maximum amount of the extremity and intra-arterial procaine-penicillin anesthesia provided an efficient anesthesia for operation on the extremity.

The present method of therapy has been especially useful in diabetic gangrene since infection so frequently plays a major role. Diabetes is always attended by a more rapid development of arteriosclerosis than in the non-diabetic individual, but among the diabetics themselves, there is a marked variation in the degree of arteriosclerosis. Thus under the single heading of diabetic gangrene, we find typical cases of dry gangrene in which vascular incompetence is the major problem and at the other extreme infection in the presence of a good circulation.

Penicillin therapy will do the most for cases with adequate circulation. In cases with impaired circulation, the progressive intimal thickening of the arteries is compensated for by collateral circulation until infection increases. The metabolic demands of the tissue cells increase and gangrene supervenes. Unless the infection can be controlled, more and more of the tissue is unable to meet the demand and a spreading gangrene results. An early high amputation is attended by a high mortality, and there is excessive loss of tissue. With intra-arterial penicillin, however, control of the infection is possible and the circulation is frequently again adequate so that time can be given to the proper preparation of the patient. Amputation is considered only after the patient has maintained a temperature below 99.6° for three days, the gangrene is well localized, and there is no surrounding inflammation in the normal tissue. At this time after evaluation of the competence of the blood supply, an elective procedure can be done at a lower mortality rate and probably at a lower amputation level. Primary closure can be done safely since with the source of infection arrested, the infection in the lymphatics above can

be irradicated. As an illustrative case, following is presented:

Case 5.—An elderly diabetic man had a wet gangrene with pitting edema and erythema of the entire left foot. Gangrenous ulceration was present on the dorso-lateral half of the foot, and a deep necrotic ulcer was present at the base of the left fifth metatarsal. Cultures revealed hemolytic streptococci and coagulase negative staphylococci. Debridement was done and the patient was given twenty intra-arterial penicillin injections over thirteen days. The areas of defect grew in well and by three weeks the plantar ulcer had healed. The remaining dorsal defect was pinch grafted at this time and nine-tenths of the pinch grafts took. Eleven days after the grafting, the foot was well healed. The patient has been ambulatory and has had no further difficulty in the intervening four months since his discharge from the hospital (Fig. 11).

Fig. 11. Healed foot in Case 5. Note skin grafts which grew well on a previously infected gangrenous surface.

In this case, intra-arterial penicillin completely controlled the infection in a diabetic wet gangrene and amputation was avoided. Elimination of infection made subsequent healing of the foot possible and skin grafts grew well on a surface which had previously been gangrenous and infected.

In summary, the intra-arterial route of penicillin therapy overcomes the factors of vascular impairments and the permeability of the wall of a local abscess cavity better than the intravenous or intramuscular methods of administration. In addition, the method is more economical and rapid in its effect than the other methods of penicillin therapy. The technique of injection is simple and there have been no complications in any of the cases treated. The only contra-indication to the method is a locally infected area over the site of injection. Intra-arterial procaine-penicillin is presented as an efficient method for simple local surgery of the extremities, whereby anesthesia, hemostasis, and chemotherapy are all obtained by a single procedure. It is hoped that the favorable results obtained by these methods will stimulate the further use of intra-arterial penicillin therapy of infections of the extremities.

Discussion

DR. HARVEY NELSON: Would Doctor Shaffer mind describing how he put the blood pressure cuff on and how long it is kept on?

DR. SHAFFER: The blood pressure cuff is placed proximally on the extremities; in the lower extremities at a site just above the knee with the center of the cuff placed medially over the thigh and then applied around the leg in the usual manner. In the case of the arm, the blood pressure cuff is similarly applied just above the elbow with the center of the cuff on the medial side of the arm. The blood pressure cuff is inflated to a value of 60 to 80 mm. of mercury prior to the time the injection is done. The injection is then done and the blood pressure cuff maintained at 80 mm. Hg. for a period of ten minutes to assure that the penicillin is forced into the tissues. When intra-arterial procaine-penicillin anesthesia is used, the blood pressure cuff is further inflated to 280 mm. Hg. after the injection and hemostasis is also obtained in addition to anesthesia and chemotherapy.

DR. N. K. JENSEN: You inflate it to 280 after making the injection?

DR. SHAFFER: The injection is done at the rate of 1 c.c. per second while the cuff is at 60 to 80 mm. Hg. and subsequent to that the blood pressure cuff is further inflated to 280 mm. Hg. whenever procaine-penicillin solution is injected. When penicillin alone is injected the blood pressure cuff is inflated to 80 mm. Hg. prior to the injection and then simply maintained at 80 mm. Hg. for ten minutes following the injection.

DR. R. J. MCGANDY: How long does the anesthesia last?

DR. SHAFFER: It lasts at least fifteen minutes and in local amputations the procedure usually takes ten to fifteen minutes. For ten to fifteen minutes following the release of the cuff, there is definite difference in sensation between the two extremities. However, in these short procedures, it is usually advisable to keep the blood pressure cuff inflated during the procedure to assure that none of the procaine escapes from the local area.

DR. HARVEY NELSON: Where do you inject in the arm?

DR. SHAFFER: The arm is injected either in the brachial artery in the antecubital space or between the brachial and axillary artery in the axilla. The most prominent pulsating artery is a good site. Injection in the axilla is more difficult because of the large nerve trunks in the vicinity. When an injection is done in the axilla, the site of most prominent arterial pulsation is located with the patient's arm extended at right angles to the body. The injection is then done with the needle at right angles to the surface of the axilla. An injection in the antecubital space is also done at the site of maximum pulsation, but the injection is done in a more oblique plane similar to an intravenous injection.

DR. KENNETH BULKLEY: Have you used intra-arterial penicillin on acute hematogenous osteomyelitis of the tibia?

DR. SHAFFER: We have had no cases of that type. However, in view of the favorable experience with chronic osteomyelitis, it should be effective since chemotherapy is more efficacious in acute osteomyelitis.

DR. A. F. BRATRUD: How about acute infections of the hand?

DR. SHAFFER: The results have been very encouraging. In one of the cases treated, it was possible to

cause a felon of the thumb to subside without incision after only one intra-arterial injection of 50,000 units of penicillin.

DR. KENNETH BULKLEY: Have you treated any acute suppurative tenosynovitis?

DR. SHAFFER: No, but Doctor Glasser has reported a case of acute tenosynovitis probably due to a gonococci in a colored woman with concomitant pelvic inflammatory disease. After one intra-arterial injection of 50,000 units of penicillin, she had complete subsidence of the infection without incision and no subsequent limitation of motion resulted.

DR. S. R. MAXEINER: I would like to throw out a word of caution on placing 25 c.c. of 2 per cent novocain in the circulation. Novocain, intravenously, is its most toxic dose; intra-arterially is the next most toxic. Some of you will recall Doctor Strachauer's paper given before the Hennepin County Medical Society when he warned about the toxicity of intra-arterial novocain. He had used intra-arterial anesthesia in amputations and left the ends of the vessels open to permit the novocain to run out before removal of the tourniquet. Fatalities have been reported from intravascular injections of novocain. When I was with Doctor Farr years ago, we used intravenous and intra-arterial anesthesia in a number of cases but we seldom used that technique. In one case of brachial anesthesia, we used 10 c.c. of 2 per cent novocain and the patient got an intravascular dose and nearly expired in the office. The second one was a man who had an operation for disease in his foot. We did an intra-arterial injection on the dorsum of the foot and again, nearly had an accident. The injection was done with a tourniquet proximally, and when it was removed, the patient suddenly went into collapse. I believe in such instances the tourniquet should be removed slowly, similar to instructions given in Red Cross work in which the poison of a snake bite is controlled by use of tourniquet which may be slowly removed, admitting only minimal doses of toxin to enter the general circulation. Twenty-five c.c. of 2 per cent novocain is equivalent to almost 2 ounces of 1 per cent novocain which may be lethal if given directly into the circulation.

DR. SHAFFER: I think Doctor Maxeiner's comment is merited when the rapid intravascular injection of procaine without stasis is used. However, with the stasis technique of injection, a large portion of the penicillin is fixed in the tissues and it is slowly released after the tourniquet is removed. Goyannes noted marked difference in the patient's response to injection of procaine with and without stasis. With the intra-arterial injection of procaine and no stasis, Goyannes obtained no anesthesia and an occasional toxic reaction was noted. However, when procaine was given intra-arterially into an extremity and then a proximal tourniquet applied for stasis, he obtained anesthesia and no concomitant toxic phenomena were noted. Similarly, no toxic reactions were encountered in any of our cases when stasis by a blood pressure cuff was used for ten to fifteen minutes following the intra-arterial injection.

DR. MAXEINER: The intravenous dose of novocain is probably the most toxic. Intra-arterially, novocain is partially detoxified when it passes through the capillaries before it reaches the general circulation.

DR. H. A. ALEXANDER: Doctor McPheeters was unable to be here tonight and asked me to describe briefly a procedure, somewhat related to that of Doctor Shaffer, which we have been using in a few selected cases.

We are mixing the penicillin with the sylnasol used as sclerosing agent for varicose veins, either in the retrograde injection at the time of a ligation, or in the injections at the office. We are not using the penicillin addition as a routine, but only in those cases with (1) recurring or recent phlebitis: (2) cellulitis; (3) furunculosis, folliculitis or other skin infection; and (4) in those cases with infected varicose ulcers. Fifty to 100,000 units of pencillin are dissolved in the saline with which we dilute the sylnasol from full 5 per cent strength to half strength. It is best used with empty vein technique. By elevation the vein is emptied of blood. The table is then tilted to a reverse Trendelenberg and the solution injected and allowed to run by gravity into the lower leg. The penicillin is thus incorporated in the thrombus caused by the sylnasol and we have our bacteriostatic agent fixed, inside the vein, at or close to the focus of infection.

As far as we know this procedure has not been reported anywhere. We have only done it twelve times at the time of ligation and three or four times with the office injections, but the results have been so uniformly better than we would have expected without the penicillin that we are quite enthused about its possibilities.

DR. R. J. MCGANDY: Is intra-arterial penicillin better than retrograde at the time of ligation in cases of phlebetic ulcer?

DR. SCHAFFER: It is advantageous to clear up the infection in the ulcer by intra-arterial penicillin prior to saphenous ligation as surgery is more likely to be complicated by a wound infection with a source of suppuration present on the extremity. After control of the infection by intra-arterial penicillin, a saphenous vein ligation can be done with better assurance of primary healing of the wound. We have also injected penicillin solution retrograde into the vein at the time of operation as an additional measure.

DR. N. K. JENSEN: I would like to ask Doctor Shaffer whether the effect of procaine (novocain) on the activity of penicillin has been studied?

DR. SHAFFER: Yes, I consulted with Doctor Spink in that respect and he tells me that procaine has no effect on the efficacy of penicillin. Procaine was advantageously used with penicillin in the local injection technique and excellent results obtained by using penicillin mixed with 2 per cent procaine solution. In one case, a procaine-penicillin mixture was infiltrated by multiple injections throughout a carbuncle on the side of a woman's forehead. Two injections of 50,000 units of penicillin in 20 c.c. of 2 per cent procaine were made and within forty-eight hours the infection in the carbuncle subsided without any need for operation. Thus an excellent therapeutic and cosmetic result was attained, whereas the usual gridiron incision would have been disfiguring to the woman.

DR. R. J. MCGANDY: Has any work been done at the University with saline injections and hyperemia?

DR. SHAFFER: No, we have not done that, but the benefit of venous hyperemia as a means of increasing collateral circulation has been recognized, and in several of the cases, the venous hyperemia which accompanies intra-arterial injection technique was thought to have effected a favorable influence on the collateral circulation.

DR. MAXEINER: I see no objection to the general use of intra-arterial penicillin, but I believe that it might be extremely hazardous to advocate intravenous novocain in general practice. I wish it understood that these remarks are not in criticism of the work of Doctor Shaffer as I would like to compliment the author on a very fine piece of work.

A NEW TYPE OF WALKNG IRON

Historical Review of the Ambulatory Treatment of Leg Fractures

HORACE G. SCOTT, M.D.
Minneapolis, Minnesota

In place of giving the customary case history before this society, I should like to present instead a new type of walking appliance for the ambulatory treatment of fractures of the lower extremity. This new walking iron has two or three features which, I believe, merit our consideration. I feel that I may recommend and praise this device as it is not my "brain child." In fact, I claim no credit for it, as it was the idea of one of my patients who had the misfortune to fracture his tibia. While wearing the customary short leg cast he conceived the idea of this new appliance. It was the instability of the U-shaped walking iron which prompted him to see if he could make a better one. I believe that this purpose has been accomplished, for the iron has several features which should recommend it to you. First and foremost, it presents much more stability for the patient in walking on waxed, terraza, linoleum and tiled floors. Second, it has a cleat which can be applied or removed in a few seconds when used in the winter months on icy pavements. As far as I can learn, this is a new feature which has never before been incorporated into any walking device. In the third place, it is as easily applied to the plaster cast as the ordinary U-shaped walking iron. In fact, it is merely a modification of this iron with the added feature of greater stability on uneven and slippery ground.

Before describing this iron in detail and showing a few pictures of the device in action, I should like to briefly review with you the historical development of the ambulatory treatment of fractures of the lower extremity with special emphasis on the development of the weight-bearing end of these walking casts.

The treatment of fractures goes back at least five or even ten thousand years, as is evident by the Nubian Excavations. Specimens from these excavations are in the Museum of the Royal College of Surgeons in London. These specimens show united and ununited fractures covered by coarsely woven cloth and splinted by the stems of palm leaves and pieces of wood. The written details of these cases are lacking, but the evidence is there for anyone to see.

Coming to historical times, one finds that 2,500 years ago Hippocrates in the fourth and fifth centuries before Christ had a profound knowledge of fractures and their treatment. If we read the chapters on fractures and dislocations in the Hippocratic Corpus, we are impressed with the keen observations and logical deductions which were made in those times, when we consider that an exact knowledge of anatomy, as we know it today, was entirely lacking. Hippocrates and his students described their methods of fracture reduction and the manner of applying bandages and splints in extremely precise detail. They recognized the necessity for careful reduction, immobilization and early restoration of the limb to its normal use. Hippocrates allowed his patient to be up and out of bed on the twentieth day following simple fractures of the ankle or fibula.

In those cases in which there was dislocation of the ankle or displacement of the fragments he felt that forty days of bed rest were enough. Had he had a good plaster of Paris cast to rely on, I am sure he would have allowed his patients up and about as soon as the swelling had subsided, which, according to him, was in about seven days. However, he had no rigid material at his disposal but he did incorporate "cerase" into his bandages to reinforce them. This substance may have been a bleached wax or possibly a flour. Exactly what "cerase" was we do not know, as he failed to describe its source or composition. It gave, however, only a semi-solid consistency to his bandages and splints.

In the second century A.D., Galen advocated essentially the same treatment for fractures as did the father of medicine seven hundred years before him. He emphasized Hippocrates' teachings by stating that "It should be kept in mind that exercise strengthens and inactivity wastes." He too had no rigid cast material and therefore could not advocate the ambulatory treatment of fractures.

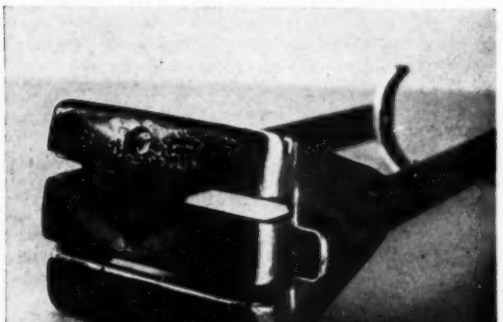
Between these early times and the beginning of the nineteenth century man sought to find just such a rigid material which would neither expand nor contract when it hardened. None was found until plaster of Paris was discovered about the end of the eighteenth century. In 1798 it was first reported in use by the Arabs for the treatment of fractures. Shortly thereafter it was introduced into Europe by Hubenthal and by Koyl and Klug in Berlin. Until the middle of the nineteenth century it was applied only in the form of a mold. The extremity after reduction was placed in a box and the wet plaster poured into the box around the limb until it had hardened. The limb with its bulky cast was then removed from the box. The disadvantages of this method can easily be seen. It was not easy to apply, it was heavy when on and it was difficult to remove. In 1852 a Flemish surgeon, Mathijsen by name, suggested the incorporation of the anhydrous calcium sulfate into the meshes of the bandages, as Hippocrates had done with his "cerase" more than two thousand years before. From then on the use of plaster of Paris quickly became widespread throughout the world. Nevertheless, the ambulatory treatment of fractures was not employed right away, for it was almost forty years later before such treatment was suggested. The first to advocate it for the treatment of fractures of the leg was Krause of Berlin in 1891. Dollinger of Budapest reported three cases in 1893. Warbasse of Brooklyn, New York, hearing of Dollinger's work, tried it on six cases in the same year. The next year Korsch in Bardeleben's Clinic reported 116 cases before the German Surgical Congress and from then on the ambulatory treatment of fractures became quite general throughout the world.

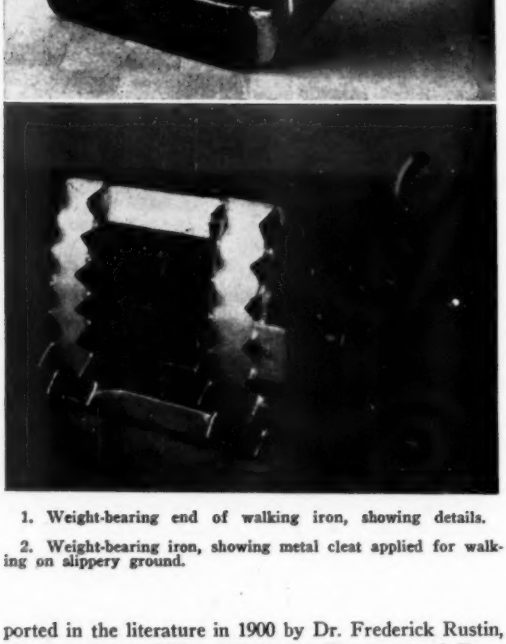
As far as I have been able to ascertain these first casts were walked upon by the patients just as they were applied. It soon became evident that the sole and heel of the cast needed strengthening and this was done by adding ten to twelve additional plasters to the sole

of the cast as advocated by Bardeleben, who reported a total of 181 cases in 1895.

The first mention of a walking iron or device to protect the sole of the cast, I am pleased to state, was reported in the literature in 1900 by Dr. Frederick Rustin, whose paper on "The Ambulatory Treatment of Fractures" was read before the tenth annual meeting of the Western Surgical Society here in Minneapolis on December 27, 1900. Dr. Rustin in his paper gives credit to Dr. Finley R. Cook of New York, who first designed and used the U-shaped walking iron in 1898 at the Presbyterian Hospital in New York. This iron, as he described it, is exactly the same as the one which we still use today, the only difference being that we have now added a piece of rubber to the bottom in order to add to its stability.

From this time on, the ambulatory treatment became a well recognized method in properly selected cases. By 1920 Boehler of Vienna had removed most of the objections to the walking cast when he was able to show the world that skin tight plaster casts could be used with impunity without causing pressure sores.





1. Weight-bearing end of walking iron, showing details.

2. Weight-bearing iron, showing metal cleat applied for walking on slippery ground.

Since the invention of Dr. Finley Cook's U-shaped walking iron numerous other types of devices have been suggested and used. Many of these suggestions were the out-growth of metal shortages during the first and second World Wars. To briefly name a few of these: wooden rockers attached to wooden soles and applied to the cast with plaster have been used extensively both in England and Germany during this past war. Bottle corks and rubber heels have been used and attached by means of moleskin or webbing incorporated into the cast. Rubber crutch tips, singly, and in pairs, with and without spring suspension have been applied to the U-shaped irons and the other more elaborate devices.

However, the walking appliance which I wish to present is relatively simple and inexpensive as are shown in the illustrations. It is primarily a modification of Dr. Cook's U-shaped iron with merely the addition of another crossbar in front and one behind the central crossbar. Each of these additional bars is tilted at a slight angle so that as one walks he first places his weight on the posterior crossbar, then the central and next the anterior bar. The action is that of a rocker. As one walks on this iron he merely rocks forward, but as he rocks he always has his weight on a flat surface and not on a curved one as is the case in the usual rocker type of walking device. By simple application of a cover with metal teeth, the patient has a walking cleat which grips the icy pavements and is safe in winter weather in these northern latitudes.

Illustrations show the walking iron without the metal cleat attached (Fig. 1) and with it attached (Fig. 2).

Credit for the development of this device goes to Mr. Kenneth Hahn who has already patented this iron and is now manufacturing it in some of the lighter metal alloys. The original devices were made by him using ordinary strap iron.

Bibliography

1. Bick, Edgar M.: Source Book of Orthopedics. Baltimore: Williams and Wilkins Co., 1937.
2. Hippocrates: Genuine Works. Translated by Francis Adams. Vol. 2. Baltimore: William Wood & Co., 1886.
3. Clark, William Arthur: History of fracture treatment up to the sixteenth century. J. Bone & Joint Surg., 19:47-63, 1937.
4. Scudder, C. L.: Textbook of Orthopedics. Chapter on Ambulatory Treatment of Fractures. Philadelphia: W. B. Saunders & Co., 1911.
5. Rustin, Frederick: The ambulatory treatment of fractures. Tr. West. S. A., 1900.
6. Castiglioni, Arturo: A History of Medicine. New York: Alfred Knopf, 1941.
7. Stephens, John S.: An inexpensive durable walking cast. J. Bone & Joint Dis., 20:502, (April) 1938.
8. Stryker, Homer H.: Rubber heels for walking casts. Surg. Gyn. Obst., 70:841-2, (April) 1940.
9. Engbretsen, Ragnar: Cork heel for walking cast. Nordisk Medicin, 9:375-78, (Feb.) 1941.
10. Luck, Capt. Vernon J.: Plaster-of-Paris casts. Clinic and experimental analysis. J.A.M.A., 124:23-29, (Jan.) 1944.
11. Foster, Capt. G. E.. Rocker walking iron. Brit. M. J., 1:592, (April 29) 1944.
12. Bush, Major L. F.: Simple walking casts. Clinics, 2:1262-64, (Feb.) 1944.
13. Farrell, Blake E.: Walking appliance for plaster casts. U. S. Naval Bull., 39:413-15, (July) 1941.
14. Goldberg, David: A practical walking cast for use under wartime conditions. Mil. Surgeon, 95:151-53, (Aug.) 1944.
15. Stamm, Major T. T.: New walking iron for short leg plasters. Brit. M. J., 2:13, (July) 1943.

ACUTE NON-MALIGNANT PERFORATIONS OF THE COLON

HENRY E. HOFFERT, M.D., F.A.C.S.
Minneapolis, Minnesota

Acute non-malignant perforations of the colon are of rather infrequent occurrence. They do however appear often enough to make a consideration of the condition worth while. In reviewing the literature on this subject one is impressed with the small amount of material available. A few articles have appeared on perforations complicating diverticulitis and ulcerative colitis, those due to foreign bodies, non-penetrating abdominal trauma and increased intraluminal pressure, and while no figures are available the impression gained is that the mortality is very high. Cases reported in the literature indicate a predominating incidence among adult males.

On an etiological basis these cases may be divided roughly into those due to either an extraluminal or an intraluminal cause. The former group is comprised almost entirely of those resulting from non-penetrating abdominal trauma. The more fixed portions of the colon, that is, the cecum, ascending and descending colons are the most liable to injury, although the transverse colon may be compressed forcibly enough against the spine to effect damage either to the bowel wall itself or the mesocolon. The perforation may be an immediate result of the injury due to tearing of the bowel wall or may occur some hours later following necrosis of a bowel segment resulting from crushing, or interference with blood supply. Dean Lewis states that it is not necessarily a severe blow that causes the visceral injury, but force applied in a circumscribed area. There need be no superficial evidences present such as abrasions, contusions, or ecchymoses to indicate the magnitude of the trauma. The intraluminal causes of perforations of the colon consist of a variety of conditions: inflammatory lesions such as diverticulitis, ulcerative colitis or more rarely tuberculous colitis, foreign bodies and those due to the raising of intracolonic pressure.

Koucky and Beck believe that acute perforations complicating chronic diverticulitis occur only in the inflamed diverticulum, as a rupture of an intramural or a peridiverticular abscess. This however may not hold true if one of the other etiological factors such as raising of intraluminal pressure or foreign body occurs in a patient having colonic diverticula. Buie, Bargen and Rankin state that in a series of 647 cases of chronic ulcerative colitis, perforation of the colon occurred in twenty-two or 3.4 per cent. This complication was seen only in the more severe and extensive cases.

Foreign bodies may be ingested or may be introduced by the anal route. Partial dental plates, nails, needles, pieces of bone, et cetera, have all been reported. Perforation has occurred following the passage of a proctoscope or a filiform catheter. Long periods of time may elapse between the ingestion of a foreign body and the occurrence of a perforation. In one of Koucky and Beck's cases eighteen years had elapsed between the swallowing of a partial dental plate and perforation of the cecum with the plate protruding through it.

Perforations due to increases in intraluminal pressure are reported following the introduction of compressed air through the anus, high colonic flushes, the administration of a barium enema, and very occasionally following a simple enema. Hawkes reports a case in which the patient used a rubber tube attached to a water tap to give himself an enema which resulted in a large perforation of the sigmoid colon.

The signs and symptoms of this condition is that of a spreading peritonitis. Pain is the most prominent symptom of an acute perforation of the colon. It is usually sudden in onset, knife-like in intensity and tends to be distributed over the entire abdomen. In those cases complicating inflammatory lesions the onset may be less abrupt as well as somewhat more localized. Nausea and vomiting are present in the majority of cases. The patient lies rigidly in bed with his knees drawn up and resents the disturbance of physical examination. The abdomen is diffusely tender, although the maximal point may be over the site of perforation, rebound tenderness is present and muscle spasm is marked. The abdomen is flat at first but tends to distend rapidly. Liver dullness is diminished and tends to disappear as distention increases, or if any free gas is present in the peritoneal cavity. The temperature is somewhat elevated but the pulse is disproportionately rapid. The skin is cold and clammy at first but gradually becomes hot and the patient becomes flushed in appearance. There is usually a moderate leucocytosis of the polymorphonuclear type with a tendency to increase as time goes on. A flat plate of the abdomen usually shows considerable distention of the colon but free gas under the diaphragm may or may not be demonstrable. A radio-opaque foreign body may also be visualized.

The diagnosis of acute non-malignant perforation of the colon is extremely difficult because of its rarity and hinges primarily upon an adequate history and a thorough physical examination. In those cases complicating known preexisting disease conditions, and in those cases following trauma or rectal interference the possibility of colonic perforation should be suspected. In the differential diagnosis other lesions causing an acute onset of peritonitis must be considered such as perforated peptic ulcer, perforated appendix, ruptured Meckels diverticulum as well as volvulus, acute pancreatitis, mesenteric thrombosis, strangulated internal hernia, pneumonitis at the lung base and coronary thrombosis. With the exception of the last two of the above conditions all constitute surgical emergencies. In appendicitis with rupture the history usually is that of diffuse pain which gradually localizes and then becomes diffuse again. It usually does not have as fulminating a course as acute colonic perforations do. The history may also help to distinguish between acute perforation of peptic ulcer and of the colon but may also in some instances confuse the issue as it did in one of the cases to be reported. In most instances the true diagnosis is not made before surgical intervention.

Surgical procedures employed for the repair and con-

Inaugural Thesis.

trol of acute colonic perforations will necessarily depend upon the site and size of the leak and the condition of the bowel and mesocolon. Manipulation of the involved bowel and abdominal exploration should be reduced to the minimum to prevent dissemination of infection. Foreign bodies when encountered should always be removed.

Simple closure alone of an acute colonic perforation should rarely be done since no previous bowel preparation has been possible and because an active peritonitis already exists. If the edges of the bowel wall at the site of perforation are otherwise normal in appearance, simple closure and proximal colostomy or cecostomy or exteriorization of the loop containing the perforation, if the mesocolon is long enough at that point, are much more advisable procedures. In the event of an adherent, edematous and inflammatory condition of the involved portion of the bowel, with or without abscess formation, such as is found in perforations complicating chronic diverticulitis, drainage of the abscess or a drain placed at the site of perforation plus transverse colostomy or cecostomy should be carried out. When perforation is associated with necrosis of the bowel wall following tearing of or hemorrhage into the mesocolon, resection, usually of the Mickulicz type is advisable when possible. Gross fecal soiling should be removed by irrigations with saline solution immediately removed with suction. The abdomen should always be drained.

Case 1.—This case is that of a white man, aged sixty-four, admitted to General Hospital on December 2, 1945, complaining of severe pain in the mid-abdomen of ten hours duration. The evening before at about eight-thirty he had slipped on an icy pavement and fallen across the curb, striking his mid-abdomen very forcibly and at the same time striking his face, breaking his glasses and sustaining several lacerations and bruises beneath the left eye. He consulted a private physician who sutured the lacerations. The patient was experiencing no abdominal discomfort at this time and no mention was made of abdominal injury. At three a.m., six and a half hours after the injury, he was suddenly seized with intense pain across the mid-abdomen which continued without abatement until admission. He had continual nausea and one emesis and there had been no defecation or passage of gas since the onset of the pain.

His past history was entirely negative. The salient features of the physical examination were as follows: The patient was well developed, well nourished, lying rigidly in bed. He appeared apprehensive, his face was flushed and his skin was warm and moist. He was acutely tender over the mid-abdomen with marked muscle spasm and some rebound tenderness. These findings gradually diminished as palpation proceeded toward the flanks as well as toward the upper and lower portions of the abdomen. There were no palpable masses and the abdomen was silent. Rectal examination revealed some tenderness. His temperature was 102.6, pulse 100, respiration shallow and rapid, hemoglobin 100 per cent, white blood count 15,600 with 91 per cent pmns. Uninalysis was normal.

X-rays of the abdomen failed to show any evidence of free gas in the peritoneal cavity. The preoperative diagnosis was an acute surgical abdomen. Conditions to be differentiated were: ruptured large or small intestine, acute pancreatitis, injured rectus muscle with possible hemotoma, hemotoma of mesentery or gut wall, perforated peptic ulcer, early pneumonia and ruptured spleen.

At operation, the abdomen being opened through a right paramedian incision, a small amount of seropurulent fluid was encountered and a large, doughy, well-walled off mass was found which consisted of omentum and transverse colon. Detailed examination and exploration of this mass resulted in the exposure of a perforation of the posterior wall of the transverse colon into the gastrocolic omentum and into the transverse mesocolon. The involved portion of the colon, mesocolon and omentum was then widely resected, exteriorized and divided between a Rankin and two Pyar clamps with the formation of a double barreled colostomy. The peritoneal cavity was then irrigated with saline and the abdomen closed around the exteriorized bowel.

The pathologists report of the specimen is as follows: "Sections of the colon show an acute ulcer with necrosis of the entire wall. The wall is infiltrated with an acute inflammatory exudate. Large clumps of bacteria are present. There is no evidence of any malignancy or specific type of inflammation. Daignosis: Acute perforated ulcer of the colon."

With the exception of a rather extensive wound infection his post-operative course was uneventful. His colostomy was closed on his seventy-fifth post-operative day and he was discharged in good condition and with a healed wound his ninety-first postoperative day. Final diagnosis: Traumatic acute perforation of the transverse colon.

Case 2.—This case is that of a white man, aged sixty-three, admitted to Asbury Hospital at 12:10 a.m., on January 13, 1945, complaining of severe generalized abdominal pain, nausea and vomiting. This pain had sarted suddenly two hours prior to admission and had not abated despite the administration of ½ grain of morphine hypodermically. Eight hours before admission and six hours before the onset of symptoms he had taken an enema because of severe constipation with good results. Following the onset of pain he attempted to give himself another enema but stated he was unable to retain much of the solution.

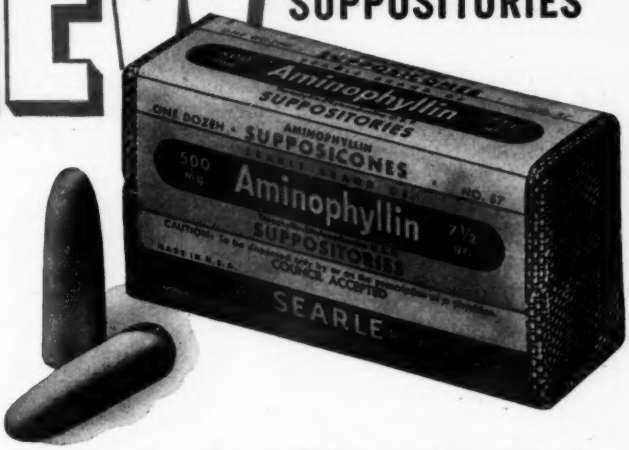
He had been hospitalized two months prior to the present admission for a transurethral prostatectomy because of vesical neck obstruction, following which he made a very satisfactory recovery. During this hospital admission he had had also a complete gastro-intestinal x-ray examination because of a history of epigastric pain and these revealed an active duodenal ulcer and some spasticity of the colon. He was placed on ulcer management and had been following his dietary program continuously. His past history otherwise was negative.

Physical examination revealed a rather thin white male suffering intense abdominal pain, lying rigidly in bed with knees drawn up. His skin was cold and clammy and his respirations very shallow and rapid. His abdomen was boardlike, moderately distended, tympanitic, without any evidence of localization. Rebound tenderness was marked and liver dullness absent. Rectal examination caused increased pain but was otherwise negative. His temperature was 100, pulse 120, blood pressure 146/90, white blood count 10,700 with 87 per cent pmns., urinalysis was negative except for a few pus cells. A flat plate of the abdomen in the upright position showed free gas beneath the right diaphragm.

A preoperative diagnosis of a ruptured hollow viscus, probably perforated duodenal ulcer was made and immediate operation advised. On opening the abdomen through a right paramedian incision cloudy, yellowish gray fluid was encountered which was aspirated with suction. Exploration of the duodenum and stomach were negative. The transverse colon was completely filled with fecal material and this condition was present down to the mid-sigmoid, distal to which the bowel was empty. Two large fecal balls were found in the pelvis. Further exploration after enlarging the incision resulted in the visualization of a perforation 2 cm. in diameter in the mid-sigmoid. The edges of the perforated bowel were

(Continued on Page 938)

NEW SEARLE AMINOPHYLLIN SUPPOSITORIES



For more convenient and effective rectal administration of Aminophyllin,* Searle Research has produced

AMINOPHYLLIN SUPPOSICONES
(SEARLE BRAND OF AMINOPHYLLIN SUPPOSITORIES)

Differing from all other types of suppositories, Searle Aminophyllin Supposicones are molded with a new base material which liquefies rapidly in the rectum, permitting complete absorption of the Aminophyllin, but which remains *stable and solid at temperatures up to 130° F. outside the body.*

Searle Aminophyllin Supposicones are non-irritating to the rectal mucosa—require no anesthetic—are of proper size and shape for easy insertion and retention.
Each Aminophyllin Supposicone contains 500 mg. (7½ grs.) Searle Aminophyllin. Packaged in boxes of 12.

ACCEPTED AMERICAN MEDICAL ASSN.

*Searle Aminophyllin contains at least 80% of anhydrous theophyllin

Supposicones is the registered trademark of G. D. Searle & Co., Chicago 80, Illinois

SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 936)

perfectly normal in appearance, there being no evidence of diverticulum, neoplasm, inflammation, necrosis or any disturbance of circulation. A loop of sigmoid containing the perforation was then exteriorized through a left McBurney incision, the pelvis irrigated with saline which was withdrawn immediately with suction and the abdomen closed.

His postoperative course was uneveentful. The colostomy spur was divided by clamps and the stoma closed. He was allowed to leave the hospital on his fifty-first postoperative day. He has remained well since.

Conclusions

1. Acute non-malignant perforation of the colon, while rare, occurs frequently enough so that this condition should be given consideration in all obscure cases of peritonitis.

2. The diagnosis is difficult and rests primarily upon an accurate history, physical examination and occasionally on some X-ray finding. It must be differentiated from other causes of spreading peritonitis.

3. Surgical measures instituted for relief of this condition are proximal colostomy with closure of perforation or abscess drainage, exteriorization of the involved bowel segment, or resection with double-barrelled colostomy.

4. Two cases are reported illustrating some of the points brought out in this paper.

I wish to acknowledge the permission granted me by Dr. L. C. Culligan to include his case in this report.

References

Bargan, J. A., and Cox, F. W.: Perforating lesions of the large intestine. Minnesota Med., 15:466-469, (July) 1932.

Bunch, J. R.: Intestinal perforations due to non-penetrating abdominal trauma. South. M. J., 17:717-722, (Dec.) 1944.

Bunch, G. H.: Acute phlegmonous and non-traumatic perforated lesions of the colon. South. Surgeon, 6:449-457, (Dec.) 1937.

Dixon, C. F., and Weber, H. M.: The diagnosis and surgical treatment of perforating lesions of the colon. Surgery, 2: 411-423, (Sept.) 1937.

Brown, Julius: Spontaneous perforation of the pelvic colon. Brit. J. Surg., 31:307-308, (Jan.) 1944.

Hawkes, E. Z.: Rupture of the colon while taking an enema. S. Clin. North America, 6:1563-1566, (Dec.) 1926.

Koucky, J., and Beck, W. C.: Acute non-malignant perforations of the colon. Surgery, 7:674-685, 1940.

Mitchell, Edward D.: Perforation of the intestines. J. Tennessee M. A., 31:337-343, (Sept.) 1938.

Ide, A. W.: Pneumatic rupture of the bowel. Minnesota Med., 19:265, 1936.

Nesse, C. C.: Rupture of colon with compressed air. Tr. Am. Proct. Soc., 38:81, 1937.

Stone, G. W.: Pneumatic rupture of the colon. Lancet, 2:216, 1904.

Discussion

DR. S. R. MAXEINER: I first wish to compliment Dr. Hoffert on a very excellent presentation. Dr. Hoffert's remarks are always brief and to the point.

I did not expect to discuss this paper but recall offhand three cases similar to those reported by Dr. Hoffert. In one I found a perforation of the sigmoid colon in which there was an old campaign button which had perforated through the wall of a diverticulum. A second patient referred to me by Dr. Paul Rowe many years ago, was found to have a perforation of a diverticulum by a fish bone which went on to abscess formation. The third patient was that of a new-born infant, seen recently through the courtesy of Dr. Charlotte Morrison. X-rays taken soon after birth revealed a tremendously dilated colon with a greatly distended abdomen but no pneumoperitoneum. Examination by rectum revealed a blind bowel without any apparent continuity with the sigmoid colon. X-rays taken twelve hours later showed an extensive pneumoperitoneum, undoubtedly the result of a rupture of this tremendously dilated colon. The baby's condition was critical and no surgery was attempted. The baby expired during the night and postmortem examination disclosed a cordlike atresia about 3 inches long between the rectum and sigmoid through which no gas or feces could pass. The cecum had a large perforation through which gas and feces escaped.

DR. J. M. HAYES: Dr. Hoffert has given an excellent résumé of the details pertaining to benign perforations of the colon. I saw a perforation from one condition he did not mention.

A doctor is a small town brought in a patient with an acute pain in the lower right abdomen. He thought the patient had an acute appendicitis and opened her at this point. The appendix was normal, but he found a foul-smelling fluid present. He decided the fluid came from a perforation in the area of the sigmoid. He then made an incision over the sigmoid and discovered the perforation in this area. He pulled the sigmoid up enough to get drainage through the wound. I enlarged the wound and brought up what appeared to be a napkin-ring type of carcinoma. We washed out the abdomen with saline solution and put in sulfanilamide, then did a Michulitz type of resection. The tumor mass was sent to Doctor Bell's laboratory and was diagnosed endometriosis.

DR. O. J. CAMPBELL: I had expected Dr. Hoffert to mention a rather rare entity—the so-called solitary ulcer of the colon. I have seen two cases. One was while serving as an intern for Dr. Dean Lewis. A young healthy girl developed abdominal pain, was operated upon, and a clean, round hole in the cecum was found. The patient had gross fecal contamination and died of peritonitis. As I recall there was no explanation for the development of the ulcer.

My only experience since, was the case of a young man who developed right lower quadrant pain and at operation had developed a walled-off ulcer of the ascending colon just above the cecum. We were able to exteriorize the cecum until the ulcer had healed, following which it was replaced. He has remained well since.

DR. KENNETH BULKLEY: Mr. President: In Doctor Hoffert's paper, he referred to traumatic rupture of the large gut. There is a lesion, seen as far as I know only in children, to which I wish to call your attention. This also follows trauma of the sudden abrupt type rather than the crushing injury. It consists of a complete transverse division of the small gut at the duodeno-jejunal junction. I have seen but two such cases. A definite pre-operative diagnosis was not made in either case. Both recovered following early end to end suture.

DR. CHARLES MERKERT: In the earlier days the common cause was typhoid.

DR. HOFFERT: I didn't find any mention made in the literature which I reviewed of the benign ulcer of the colon causing perforation. Most any blow in the abdomen is a potential cause for perforation of the colon. A number of cases are reported of children who are struck in the abdomen by bicycle or tricycle handlebars. A kick by a mule or a horse or even a blow with the fist are also mentioned. In the previous years typhoid fever was a common cause for perforation, secondary to ulceration in the colon. The incidence of this disease, however, has decreased to the extent that few cases are seen, and consequently complications have been reduced very markedly.

The meeting adjourned.

ERNEST R. ANDERSON, M.D.
Recorder

Information!

—ABOUT THE NEW

Campbell's STRAINED BABY SOUPS

Q. What are the ingredients in Campbell's Strained Baby Soups?

A. Campbell's use carefully selected meats, cereals and those vegetables scientifically recognized as having the most desirable nutritive qualities. All the food properties are natural. Because Campbell's are accustomed to purchasing only selected meats and vegetables, the best is assured for Campbell's Strained Baby Soups.

Q. What about vitamin and mineral retention?

A. The latest scientific information has been drawn upon in the development of a cooking method to insure the effective conservation of vitamins and retention of minerals.

Q. When should Baby be started on strained soups?

A. Campbell's Strained Baby Soups can be started as early as any strained baby foods. Depending upon the baby, pediatricians recommend beginning between the ages of three and six months.

Q. What about the flavor of Campbell's Strained Baby Soups?

A. Every mother wants her baby's food to be palatable. Campbell's preparation and cooking methods have been devised to retain natural flavors insofar as possible. Babies develop food preferences early, accept some foods, reject others. Their acceptance of Campbell's Strained Baby Soups is indicated by the increasing demand for these soups wherever they have been introduced.

A comprehensive analysis of each soup may be had upon application to Campbell Soup Company, Camden, New Jersey.

5 KINDS:

CHICKEN
BEEF
LAMB
LIVER
VEGETABLE

All in Glass Jars

Campbell's Strained Baby Soups represent fine quality . . . in ingredients . . . in care and method of cooking . . . in retention of minerals and conservation of vitamins . . . and in good flavor. Every resource of Campbell's Kitchens is devoted to that aim.

LOOK FOR THE RED-AND-WHITE LABEL

CAUGHT in the storm center of the menopause—bewildered by vasomotor disturbances, mental depression, pain and tension—many patients may be restored to comparative tranquillity by well timed estrogenic therapy.

When you base your treatment on an estrogenic product of unquestioned purity and potency, you can feel certain you have given your patient the best assistance possible through medication.

Physicians using Solution of Estrogenic Substances, Smith-Dorsey, may rest upon that certainty ... for Smith-Dorsey's product is manufactured under rigidly regulated conditions ... to meet the highest standards of the industry.

A reliable product ... judiciously administered ... receding menstrual "storm" symptoms.

SOLUTION OF *Estrogenic Substances* SMITH-DORSEY

Supplied in 1 cc. ampuls and 10 cc. ampul vials representing potencies of 5,000, 10,000 and 20,000 international units per cc.

THE SMITH-DORSEY COMPANY

LINCOLN, NEBRASKA • DALLAS • LOS ANGELES

Manufacturers of Pharmaceuticals to the Medical Profession Since 1908

In Memoriam

FRANK H. ALEXANDER

Dr. Frank H. Alexander, Saint Paul, died August 3, 1946, at the age of seventy-eight.

Dr. Alexander was born in Charlotte, Vermont, March 19, 1868. He was graduated from the Medical School of the University of Minnesota in 1897. He served as surgeon for the Great Northern Railway at Barnesville, Minnesota, until 1911 when he began private practice in Saint Paul. He was a member of the Ramsey County Medical Society, the Minnesota State and American Medical Associations, and was a Mason.

Dr. Alexander is survived by his daughter, Mrs. R. G. Keyworth, Saint Paul.

ARNOLD L. HAMEL

Dr. A. L. Hamel, for thirty-two years a practicing physician in Minneapolis, died of a heart attack July 31, 1946, at Brainerd, Minnesota, while en route with members of his family to Whitefish Lake.

He was born at Wolverton, Minnesota, April 23, 1888. He obtained a B.A. degree from Holy Cross in 1910 and his M.D. degree from the University of Minnesota in 1915.

Dr. Hamel was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He also belonged to the Knights of Columbus, the Alpha Kappa Kappa medical fraternity, and was a member of Alpha Omega Alpha, honorary medical fraternity.

He is survived by his wife, five sons, Dr. Joseph Hamel of Milwaukee, and Robert, John, James and Arnold, Jr., Minneapolis; and five daughters, Mrs. Edwin H. Ryan of Saint Paul, and Anne, Betty Nell, Virginia and Lucy, Minneapolis.

E. M. KINGSBURY

Dr. E. M. Kingsbury, who has been on the staff of the Moose Lake State Hospital as senior physician since October, 1941, died August 8, 1946, from coronary thrombosis.

Dr. Kingsbury was born at Des Moines, Iowa, September 27, 1883. He graduated in medicine from the University of Iowa in 1906. He practiced at Hillsboro, Iowa, from 1906 to 1908, at Norman Oklahoma, during 1908 and 1909, and was employed as physician in the Panama Canal project from 1909 to 1915. He then practiced in Davenport, Iowa, from 1915 to 1921, when he moved to Clearwater, Minnesota, and engaged in general practice until 1941, at which time he became a member of the staff of the Moose Lake State Hospital.

He was married in 1923 at Clearwater and is survived by his widow.

Dr. Kingsbury was a member and past president of the Stearns-Benton Medical Society, a Mason and a member of the Lodge of Perfection of the Scottish Rite.

ANNOUNCING

The

CARDIOTRON

THE PORTABLE *Direct-Recording* ELECTROCARDIOGRAPH

MOST MODERN EKG

. . . created by Electronic Science

INSURES PERMANENTLY RECORDED STANDARD READINGS

Instantaneously

- **Simple and Easy to Operate**
- **Instantaneous Standard Recordings**
- **Records Continuously for 30 Minutes**
- **Perfect Cardiograms Anywhere**
- **Portable and Vibration-proof**
- **Invaluable in Research**
- **Guaranteed Accuracy**
- **Greater Operating Economy**

Distributed by

C. F. ANDERSON CO., INC.

901 MARQUETTE AVENUE MINNEAPOLIS 2, MINN.

Prevent
INFECTION
with
MERCUROCHROME
(H. W. & D. brand of merbromin, dibromoxymercurifluorescein-sodium)
Extensive use of the Surgical Solution of Mercurochrome has demonstrated its value in preoperative skin disinfection. Among the many advantages of this solution are:
Solvents which permit the antiseptic to reach bacteria protected by fatty secretions or epithelial debris.
Clear definition of treated areas. Rapid drying.
Ease and economy of preparing stock solutions.
Solutions keep indefinitely.
The Surgical Solution may be prepared in the hospital or purchased ready to use.
Mercurochrome is also supplied in Aqueous Solution, Powder and Tablets.
HYNSON, WESTCOTT & DUNNING, INC.
Baltimore 1, Maryland
HWD
MERCUROCHROME

REPORTS and ANNOUNCEMENTS

VAN METER PRIZE AWARD

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300.00 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held in Atlanta, Georgia, April 3, 4, 5, 1947, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English; and a typewritten double spaced copy sent to the corresponding secretary, Dr. T. C. Davison, 207 Doctors Building, Atlanta 3, Georgia, not later than January 1, 1947.

CHICAGO MEDICAL SOCIETY

The third annual clinical conference of the Chicago Medical Society will be held at the Palmer House, Chicago, on March 4, 5, 6, and 7, 1947. Prominent men in medicine from all sections of the United States will take part in the program.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club, St. Paul; Tuesday evening, September 10, 1946.

The program for the evening included the following papers:

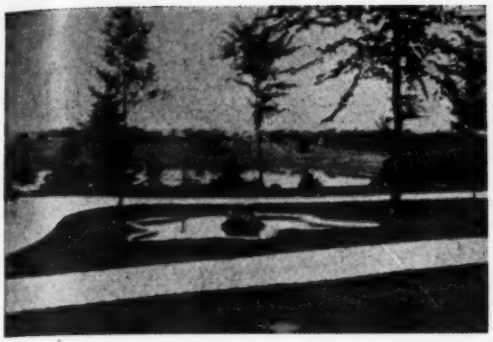
Electro-encephalographic Studies in Idiopathic Epilepsy, Idiopathic Syncope, and Related Disorders—Ralph Rossen, M.D.

The Rorschach Test—Gordon R. Kamman, M.D.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

Attended by more than one hundred doctors from all parts of the state, many of whom were accompanied by their wives, the twenty-sixth annual meeting of the Northern Minnesota Medical Association was held in Crookston on August 24. Dr. George J. Sherwood, of Kimball, president of the Association, presided at the morning session which was devoted to a discussion of medical economics. Speakers at this session included Dr. Berton J. Branton, of Willmar, who spoke on prepaid medical care; Dean H. S. Diehl, of the University of Minnesota Medical School, who talked on present medical education and its relation to the family physician. Dr. Richard B. Hullsiek, of the Veterans Administration, explained medical service available to the veteran. Drs. Carl J. Lund and Norman H. Baker, of Fergus Falls, and Drs. John F. Norman and Manford O. Oppegaard, of Crookston, took part in the concluding discussions.

(Continued on Page 944)



Part of the Grounds

Glenwood Hills Hospitals

3501 Golden Valley Road
Hyland Station
Route Seven

Operated In Connection with Homewood Hospital

Plymouth at Penn Avenue, Minneapolis

FOR THE TREATMENT OF NON-SURGICAL AND NON-INFECTIOUS DISEASES

A modern hospital built on the cottage plan. The buildings are located on elevated land, affording beautiful views on all sides. Glenwood Hills Hospitals have all the advantages of rural surroundings, and are still only a few minutes by automobile from the Minneapolis loop.

AN INVITATION

The facilities of these institutions are available for all reputable members of the medical profession.

HOMEWOOD HOSPITAL is one of the Northwest's outstanding hospitals for the treatment of Nervous Disorders—equipped with all the essentials for rendering high grade service to patient and physician.

Operated in Connection with Glenwood Hills Hospitals

HOMEWOOD HOSPITAL

Corner Penn and Plymouth Avenues North
Minneapolis Minnesota

DANIELSON MEDICAL ARTS PHARMACY, INC.

10-14 Arcade, Medical Arts Building
825 Nicollet Avenue—Two Entrances—78 South Ninth Street
MINNEAPOLIS

PHONES:
ATLANTIC 3317
ATLANTIC 3318

HOURS:
WEEK DAYS—8 to 7
SUN. AND HOL.—10 TO 1

PHYSICIANS AND HOSPITALS SUPPLY CO., Inc.

414 SOUTH SIXTH ST., MINNEAPOLIS, MINN.

INSTRUMENTS · TRUSSES · EQUIPMENT · PHARMACEUTICALS · DRUGS

MAIN 2494

NORTHERN MINNESOTA MEDICAL ASSOCIATION

(Continued from Page 942)

At noon the Red River Valley Medical Society were luncheon hosts to the visiting doctors at the Hotel Crookston and the Ladies' Auxiliary entertained the out-of-town ladies at a bridge luncheon at the Hotel Wayne.

The scientific session during the afternoon was opened by Dr. Mark B. Coventry, of Rochester, who talked on internal derangements of the knee joint. The other speakers were Dr. Martin Nordland, of Minneapolis, who discussed vagotomy for gastric duodenal ulcers; Dr. Charles Rea, of St. Paul, who presented new concepts in the treatment of thyroid disease, and Dr. Randall G. Sprague, of Rochester, who talked on the use of insulin mixtures. Dr. Edward L. Tuohy, of Duluth, assisted by his associates, directed a clinical x-ray pathological conference.

Dr. Willard L. Burnap, of Fergus Falls, presided at the banquet, which was opened with a brief talk by Dr. Edwin J. Simons, of Swanville, president of the Minnesota State Medical Association. The guest speaker was Dr. Walter H. Judd, of Minneapolis, congressman for the Fifth District. Dr. George J. Sherwood also gave an address.

Officers elected for the ensuing year are Dr. Richard Newton Jones, of St. Cloud, president; Dr. Carl Lund, Fergus Falls, vice president, and Dr. Chester L. Oppegaard, Crookston, secretary and treasurer.

MEDICAL BROADCAST FOR SEPTEMBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

September			
3	1:15	WCCO	The Hospital as a Diagnostic Center
5	1:15	WCCO	Food Fads and Fallacies
7	11:30	KUOM-KROC-KFAM	Medicine in the News
10	1:15	WCCO	Nursing Service
12	1:15	WCCO	Diet for the Aged
14	11:30	KUOM-KROC-KFAM	Medicine in the News
17	1:15	WCCO	The Hospital as an Emergency Center
19	1:15	WCCO	Food Allergies
21	11:30	KUOM-KROC-KFAM	Medicine in the News
24	1:15	WCCO	Nursing Needs
26	1:15	WCCO	Dental Research
28	11:30	KUOM-KROC-KFAM	Medicine in the News

REFRESHER COURSES

Specialized refresher courses enrolling 180 army physicians who spent the war in administrative positions will be given in twenty-five medical or allied subjects at Mayo Foundation, Rochester, and twenty-six other universities and medical institutions throughout the nation, the war department announced September 16.

The Stethetron

By

Maico

A REMARKABLE development which assures accuracy in auscultatory diagnosis.

An electronic stethoscope which amplifies the faint heart and chest sounds you wish to hear while subduing the other sounds to convenient levels for comparison.

Easily detects faint murmurs and disease sounds which cannot be heard through the old-fashioned acoustic stethoscope.

A demonstration will convince you.

MAICO of Minneapolis, 74 So. 9th Street
Adams Bros. Distributors **Tel. Atlantic 4329**
MAICO of St. Paul, 1108 Commerce Bldg.
Louis J. Kelly, Mgr. **Tel. Garfield 6144**

North Shore Health Resort

Winnetka, Illinois

on the Shores of Lake Michigan

A completely equipped sanitarium for the care of
nervous and mental disorders, alcoholism and drug addiction
offering all forms of treatment, including electric shock.

SAMUEL LIEBMAN, M.S., M.D.
Medical Director

225 Sheridan Road — Phone Winnetka 211

Prescription for Security

Don't worry! Put the basic part of your surplus earnings in 100% safe and sound Savings and Loan shares—they are insured, readily available and earn substantial dividends.

Northwestern Federal SAVINGS AND LOAN ASSOCIATION
INSURED INSTITUTION FOR HOME PROTECTION

NORTHWESTERN FEDERAL
SAVINGS AND LOAN ASSOCIATION
823 MARQUETTE AVE. MINNEAPOLIS, MINN.
AT THE ENTRANCE TO THE FOSHAY TOWER

Of General Interest

Dr. Irving C. Bernstein and Dr. John Maunder have joined the staff of the Oliver Clinic at Graceville. Both physicians were recently released from military service.

* * *

Dr. Robert R. Kierland, Mayo Clinic, has been on an inspection tour of hospitals operated by the Veterans Administration in the area of Rapid City, South Dakota.

* * *

Dr. Milo M. Loucks, formerly of Northome, has entered practice in Kelliher. Mrs. Loucks, who is a registered iurse, is assisting the doctor in his office.

* * *

Drs. Truman A. and Homer H. Hedemark, who have been in practice at Thief River Falls, have moved to Ortonville where they have opened offices and purchased homes.

* * *

Dr. Joseph O. McKeon, who in addition to his medical practice of medicine at Montgomery served as mayor for several years, has moved to Faribault and opened offices there.

* * *

Dr. Roy W. Sorenson, who was recently discharged from military service, has joined the Martinson Clinic at Wayzata. A native of Minnesota, Dr. Sorenson took his medical degree at the Los Angeles Medical College.

* * *

Dr. Glenn E. Nelson, who looked after the patients of Dr. Esser in Gibbon during the latter's recent illness, has entered practice in Fairfax. Dr. Nelson served in the Navy Medical Corps during the war.

* * *

Dr. Wayne W. Canfield, formerly in practice at Houston, has opened offices in Winona. Dr. Canfield was recently discharged from the Army after two years of service.

* * *

After three and a half years at the Mayo Clinic in Rochester, Dr. Allen Benson has gone to Glendale, California, where he will engage in the practice of internal medicine.

* * *

Dr. Malvin I. Hauge of Clarkfield is occupying offices in the basement of the new Clarkfield Memorial Hospital until such time as he can erect a clinic building for private practice.

* * *

Dr. William Cleaves is now associated in practice with Dr. Werner J. Lund at the Staples Clinic. Prior to entering military service, from which he was recently discharged, Dr. Cleaves was in practice at Grand Rapids.

* * *

Among the out-of-town physicians who enrolled for the special course for the study of poliomyelitis at the University of Minnesota in August were Dr. Howard K. Helseth, of Fergus Falls, Dr. Walter H. Valentine, of Tracy, and Dr. Malvin I. Hauge, of Clarkfield.

* * *

Dr. Raymond Hottinger, who has been taking a six months' postgraduate course in medicine and surgery at the University of Minnesota since his discharge from the Army, has returned to his practice in Janesville.

* * *

Dr. E. J. G. Bloemendaal, formerly of Iowa, has taken over Dr. Clarence W. Moberg's practice at Lake Park, effective after August 1. Dr. Bloemendaal recently returned to civilian practice after nine years in the Army.

* * *

Dr. Ellsworth E. Thayer has sold his office building in Truman, closed his practice there, and has opened offices in Fairmont.

Dr. Thayer was recently discharged from military service with the rank of captain.

* * *

Work on Dr. Manford B. Dahle's new clinic building at Glenwood has begun and occupancy is promised for the first of the year. Modernistic in design, the building will be 80 by 60 feet, of cement and white brick construction.

* * *

Dr. Gerald Ahern, of Rochester, with Mrs. Ahern and their children, has been visiting his mother, Mrs. Amanda Ahern, at her home in Austin. Dr. Ahern is completing a fellowship in orthopedic surgery at the Mayo Clinic.

* * *

Dr. William E. Fitzsimons, Brainerd, was awarded the Minnesota Power & Light Company's private enterprise trophy and emblem key in recognition of his outstanding contribution to the promotion of civic enterprise at a special dinner meeting of the Brainerd Junior Chamber of Commerce.

* * *

After thirty-nine months in the Army, Dr. Hubert has reopened his offices in Worthington.

A member of the Army Air Force, Dr. Hubert was stationed at Lincoln, Nebraska, for two and a half years, six months at Scott Field, in East St. Louis, and then at Kiester Field, Mississippi, on the Gulf.

* * *

Dr. Carleton G. Kelsey, formerly of Hinckley, has purchased the Hunte Building in Truman from Dr. Ellsworth A. Thayer, and expects to establish his offices and living quarters there. Later, when a suitable home can be secured, he plans to remodel the building into offices for physicians and dentists.

* * *

(Continued on Page 948)

Authorities Agree

Cervical Cauterization is THE Modern Method

ARTICLES in leading medical journals emphasize that cervical treatment by electro-cauterization is the *Modern Method,* as an office procedure without anesthesia. A comparative chart shows the results of treatment by cauterization, coagulation and conization. It points out that cauterization results in a more rapid cure: a more positive cure and greater freedom from complications.

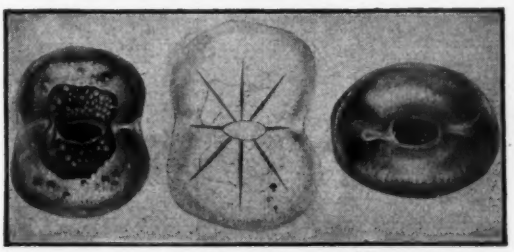
When choosing a cautery, most physicians prefer "National" because the National Simplified-Control Cautery offers these advantages:

MOST COMPLETE—Most impressive Cautery ever developed.

SIMPLEST TO OPERATE . . . only 3 simple dials in perfect vertical alignment on a single vertical panel.

TWIN CONTROLS for the safe and simultaneous operation of lights and cautery.

"DUAL POSITION" Cautery Pistol: Electrodes may be inserted so that cutting edges are in either vertical or horizontal position. Detachable illuminator located below the field of vision—entirely out of line of sight.



1. Cervix showing eversion of lip, erosion and ectropian. Nabothian cysts seen studding the vaginal surface.

2. Showing radial lines of cauterization. Dotted lines indicate the depth of cauterizing cuts in the endocervix.

3. Appearance 5 months after treatment. Cervix is diminished in size; erosion and ectropian checked.

More Physicians Buy

National Cauteries

Than Any Other

Distributed by

MM-946

PHYSICIANS AND HOSPITALS SUPPLY CO., Inc.

414 SOUTH SIXTH ST., MINNEAPOLIS, MINN.

KALMAN & COMPANY, INC.

Investment Securities

Members:

Chicago Stock Exchange
Minneapolis-St. Paul Stock Exchange

ST. PAUL MINNEAPOLIS

DOBBS TRUSSES

Designed for

COMFORT *and* SECURITY

- **No Bulbs**
- **No Belts**
- **No Straps**

Eliminates
Chafing — Binding — Rubbing
and All Constricting Pressure

Touches body in two places only—the soft front and back pads. Soft rubber CONCAVE PAD fits the curvature of the body and pubic bone—securely holds the rupture with a firm but gentle pressure.

Fitted by carefully trained technicians.

DOBBS TRUSS SALES CO.

608 Nicollet Ave. Main 0729
Minneapolis 2, Minn.

(Continued from Page 946)

Dr. Philip K. Arzt of Saint Paul has been elected a charter member of the Eastern Association of Electro-encephalographers. This Association was formed last May by a group of electro-encephalographers from the New York Neurological Institute and from the Massachusetts General Hospital. The Association now has about seventy-five members.

* * *

Dr. R. L. Schmidtke, who has been associated with Dr. Frank E. Burch for the past four years, has opened new offices at 441 Lowry Medical Arts Building, Saint Paul. His practice is limited to ophthalmology and ophthalmic surgery.

* * *

Dr. Manford O. Oppegaard, Crookston, has been in San Francisco for the meeting of the American Medical Association. Mrs. Oppegaard, who was visiting in southern California, joined the doctor in San Francisco and before returning home by way of Seattle, they visited points of interest on the West Coast.

* * *

Captain Burtis J. Mears, who was recently discharged from the Army Medical Corps, has opened offices for the practice of internal medicine in the Lowry Medical Arts Building, Saint Paul. Dr. Mears' assignment was at the hospital at the Atomic Bomb Project at Oak Ridge, Tennessee.

* * *

Dr. and Mrs. Percy Watson have returned to Northfield after a stay of four years in Bemidji, where Dr. Watson was engaged in public health work for the State Board of Health. For the first three years in Bemidji, Dr. Watson was associated with work related to the Chippewa Indian Board. Dr. Watson was a medical missionary in China some years ago.

* * *

Dr. Hendricks, formerly of Minnesota, and more recently of Rock Springs, Wyoming, has purchased Dr. Howard G. Bosland's practice in Verndale. A graduate of the University of Minnesota School of Medicine, Dr. Hendricks was at one time an instructor at the university and has taught medicine for about twenty years.

Verndale has had no resident physician since Dr. Bosland became associated with the clinic at Willmar.

* * *

Announcement has been made of the appointment of Dr. Saul Friedfeld, formerly of Iowa City, Iowa, as radiologist at Wesley Hospital in Wadena.

Dr. Friedfeld has been radiologist at the University of Texas in Galveston and Montifiore Hospital in New York City. In addition to his duties at Wesley Hospital, he will also do the radiology work for Perham, Detroit Lakes and Breckenridge.

* * *

Dr. Edward J. Juers has been discharged from military service with the rank of commander in the U. S. Naval Reserve and has resumed his practice at the Inter-State Clinic in Red Wing.

Dr. Juers' assignments during his almost three years of Naval duty included eighteen months on Guam, where he was head of the orthopedic department. He also filled

Radiation Therapy Institute

of Saint Paul

CHARLES T. MILLER HOSPITAL

Treatment Room

Facilities for Radium and Roentgen Therapy, Including Million Volt Constant Potential Installation of Most Advanced Design.

You are cordially invited to visit the Radiation Therapy Institute and inspect its facilities

Edward Schons, M.D., *Director* J. P. Medelman, M.D., *Associate Director*

the same position in two other hospitals, the last the U. S. Naval Hospital in Seattle, Washington. For his work on Guam, Dr. Juers was awarded the Commendation Ribbon.

* * *

A 1923 graduate of the University of Minnesota School of Medicine, Dr. Rosenfield was in practice at Pequot Lakes until 1938, when he went to Hibbing. He is a veteran of both World Wars and with the rank of major served for many months in the China-India-Burma Theatre. His son, Stanley, is now with the American forces in Tokyo, and his daughter Judith is studying nursing in New York City.

* * *

Dr. Abraham B. Rosenfield has resigned his office of school physician with the Hibbing public school system, effective August 5, and has joined the personnel of the State Department of Health in Minneapolis. Dr. Rosenfield will remain with the department until October, when he will begin a nine months' course of study for a master's degree in public health at the University of Minnesota School of Public Health.

* * *

Dr. Leonard A. Lang, Minneapolis, has been made a member of the Board of Trustees of St. Thomas College, Saint Paul.

Dr. Lang was valedictorian of the Class of 1925, St. Thomas, from where he went to the University of Minnesota Medical School. Following his graduation from the university he was assistant professor in obstetrics there for six years, then entered private practice in Minneapolis, where he is a member of the Board of Directors of the Minneapolis General Hospital.

* * *

Dr. Charles L. Sherman, Luverne, was elected president of the Sanatorium Commission at the annual meeting of the Southwestern Minnesota Sanatorium in July. Dr. Sherman was the first president chosen when the board was organized in 1915 and his recent election is the 32nd consecutive time he has been returned to office. He is the only member of the original board still serving.

* * *

Dr. John W. Gridley, formerly of Rochester, is now associated in practice with Dr. Hillard H. Holm in Glencoe. A graduate of the University of Minnesota Medical School, Dr. Gridley served his internship at the Miller Hospital in Saint Paul and also a year's residency in surgery there. He is a veteran of the last war, where he served for two years in the Medical Corps with the rank of captain.

* * *

Dr. John Paulson, Mayo Clinic, has been presented with a commendation by Secretary of Navy James Forrestal in recognition of "extremely meritorious service in support of military operations as First-Aid Ship during the campaign to recapture the Philippines from October 24 to December 30, 1944....."

With the rank of lieutenant, Dr. Paulson was a mem-

BROWN & DAY

For Professional Supplies and Service

BROWN & DAY, INC.

St. Paul 1, Minnesota

Cook County Graduate School of Medicine

(In Affiliation with Cook County Hospital)

Incorporated Not for Profit

ANNOUNCES CONTINUOUS COURSES

SURGERY—Two-week Intensive Course in Surgical Technique, starting September 23, and every four weeks thereafter.

Four-week Course in General Surgery, starting September 9, October 7.

One-week Course in Surgery of Colon and Rectum, starting September 16, October 14.

One-week Course in Thoracic Surgery, starting September 23.

GYNECOLOGY—Two-week Intensive Course, starting October 21.

One-week Personal Course in Vaginal Approach to Pelvic Surgery, starting September 16, October 14.

MEDICINE—Two-week Intensive Course, starting September 23, October 21.

General, Intensive and Special Courses in all Branches of Medicine, Surgery and the Specialties

TEACHING FACULTY — ATTENDING STAFF OF COOK COUNTY HOSPITAL

Address:

Registrar, 427 S. Honore St., Chicago 12, Ill.

ber of the U. S. LST-464, caring for casualties prior to removal to hospital ships. He left the Clinic in October, 1944, and returned to his work in the Section of Anesthesiology on July 8, 1946.

* * *

Dr. Donald T. Anderson, who completed his internship at Miller Hospital in June, entered active service in the Army Medical Corps with assignment on the medical staff of the Veterans Hospital at St. Cloud.

Dr. Anderson is a native Minnesotan, having been born at Red Wing. He is a graduate of Hamline University and the University of Wisconsin Medical School, where he received his doctor's degree in 1945.

* * *

With the sale of his interest in the Home Hospital Corporation at Slayton to Drs. Henry C. Doms and Roy F. Pierson, in July, Dr. Leon A. Williams took a first step towards taking things a bit easier. Dr. Williams has been practicing for fifty years, forty-two of them at Slayton. He will continue to occupy his offices and keep regular hours and will serve on the courtesy staff at the hospital.

* * *

Announcement has been made of the resignation of Dr. David O. N. Lindberg as Superintendent and Medical Director of Buena Vista Sanatorium at Wabasha. Dr. Lindberg has accepted a similar position at the Utah State Sanatorium at Ogden and has moved there with his family. In addition to his work at the sanatorium, Dr. Lindberg will also teach at the University of Utah School of Medicine.

* * *

Dr. Mario M. Fischer, director of public health in Duluth, has been made a member of the National Tuberculosis Association's Board of Directors. Minnesota is now represented on the board by three members. The other two are Dr. Sidney A. Slater, Worthington, superintendent of the Southwestern Minnesota Sanatorium, and Dr. H. Corwin Hinshaw, of Rochester, who is also vice president of the association.

* * *

Dr. William C. Bernstein has reopened his offices in the Lowry Medical Arts Building in Saint Paul for the practice of protology. Dr. Bernstein, a major in the Army Medical Corps, was recently released from assignment on the Atomic Bomb Project at Oak Ridge, Tennessee, where he was proctologist for the personnel.

Dr. Bernstein has also resumed his clinical work at the University of Minnesota Hospitals.

* * *

Dr. Paul M. Smith, formerly of Rochester, is now associated in practice with Dr. Frederick W. Franchere at Lake Crystal.

Dr. Smith was discharged from military service in May after thirty-six months in the Army Medical Corps, with assignment in the European Theatre for twenty-seven of them. He is a graduate of the University of Minnesota Medical School and he interned at the General Hospital at Wilkes-Barre, Pennsylvania.

ESTROGENIC SUPPORT WHEN NEEDED MOST

This well tolerated synthetic estrogen offers all of the advantages of the natural substances, and at the same time is far more economical. It is not a stilbene derivative.

Clinicians who have investigated Schieffelin BENZESTROL agree that the response of patients suffering from the distressing symptoms that frequently attend the menopause, has been most gratifying.

In addition, Schieffelin BENZESTROL has proved of benefit for the suppression of undesirable lactation and as a supplementary medication in infantile gonorrheal vaginitis.

Available in tablets of 0.5, 1.0, 2.0 and 5.0 mg.; in solution in 10 cc. vials, 5 mg. per cc.; and vaginal tablets of 0.5 mg. strength.
Literature and Sample on Request

Schieffelin BENZESTROL

Schieffelin & Co. 20 COOPER SQUARE, NEW YORK 3, N.Y.
Pharmaceutical and Research Laboratories

Dr. Gordon S. Paulson, son of Dr. Theodore S. Paulson, of Fergus Falls, has opened offices for the practice of medicine in Evansville.

Dr. Paulson was recently discharged from the Army with the rank of major after two and a half years of service, most of the time in Italy. He is a graduate of St. Olaf College and the University of Minnesota School of Medicine. Prior to entering the Army, he had been on hospital duty in the Canal Zone for a year.

* * *

Dr. Thomas G. Wellman has resumed his practice at Lake City after an absence of forty months in the Army where he was a flight surgeon for the 369th Fighter Group. During the greater part of his service Dr. Wellman was assigned to military centers in the South.

A graduate of the University of Minnesota Medical School, Dr. Wellman interned at Jersey City, N. J., and was in practice in northern Minnesota for about three years prior to opening his offices at Lake City.

* * *

Dr. Charles W. Mayo, Rochester, and Dr. Harold S. Diehl, dean of the University of Minnesota Medical School, took part in the discussion of the medical plan for veterans at the American Legion convention in St. Cloud, August 10 to 14. Dr. Diehl is chairman of the dean's committee which is responsible for the selection of medical personnel for the Fort Snelling Veterans Hospital.

Announcement has been made of the dissolution of the partnership of Dr. Herman J. Just and Dr. Rudolph C. Radabaugh at Hastings on July 31, 1946.

Dr. Just will maintain offices at the Latto Hospital, where he has been a member of the staff since coming to Hastings in 1943, until other arrangements can be made. He is also part-time physician at the Hastings Hospital under the Minnesota Civil Service Commission.

* * *

Major Joseph M. Ryan, Saint Paul, was transferred from his assignment on the Atomic Bomb Project at Oak Ridge, Tennessee, where he was chief of the Medical Service, to the Percy Jones Hospital at Battle Creek, Michigan, in April, and is now serving as assistant chief of the Medical Service. Before leaving Oak Ridge, Dr. Ryan was presented with the Army Commendation Ribbon. He has been in service for three years and expects his discharge in October.

* * *

Dr. David Craig, who since his discharge from military service last November has been engaged on a teaching fellowship at the University and Ancker Hospitals, has completed his work and has entered the practice of internal medicine in association with Dr. Joseph F. Borg in the Lowry Medical Arts Building, Saint Paul. A captain in the Army Medical Corp, Dr. Craig was with the Twenty-sixth General Hospital in England, Africa and Italy.

Dr. Elmer T. Ceder has opened offices for the practice of dermatology and syphilology at 652 Medical Arts Building. A 1930 graduate of the University of Minnesota Medical School, Dr. Ceder served his internship at the Mayo Clinic. He was with the U. S. Public Health Service at Baltimore, Maryland, from 1932 to 1935. He returned to the Mayo Clinic in 1935 and remained there until 1941. After a year's absence, he again returned to the Clinic where he stayed until leaving on June 1, 1946, to enter private practice.

* * *

Announcement has been received of the marriage of Dr. Susanne Geist, Saint Paul, to Dr. Swift C. Black, Springfield, South Carolina, at the home of the bride's parents, Mr. and Mrs. John Geist, in Saint Paul, on August 19. The wedding was the culmination of a romance that began when both the young doctors were serving their internship at the Jackson Memorial Hospital in Miami, Florida, in 1943.

Dr. Geist is a graduate of the University of Minnesota Medical School, and Dr. Black graduated from the Medical College, University of South Carolina.

* * *

Dr. George Haugen, accompanied by his bride of July 3, has been visiting his mother, Mrs. T. G. Haugen, at her home at Fergus Falls.

Dr. Haugen, a lieutenant, junior grade, was discharged from the Navy on July 17 after three years in service. He enlisted while still attending the University of Minnesota and served overseas on the destroyer, *USS Bennett* in the Pacific. He also served aboard ship at Bremerton, Washington, and San Diego, California.

Mrs. Haugen was formerly Mary Lucile Cox, daughter of Mr. and Mrs. W. H. Cox, of Hamilton, Ohio.

* * *

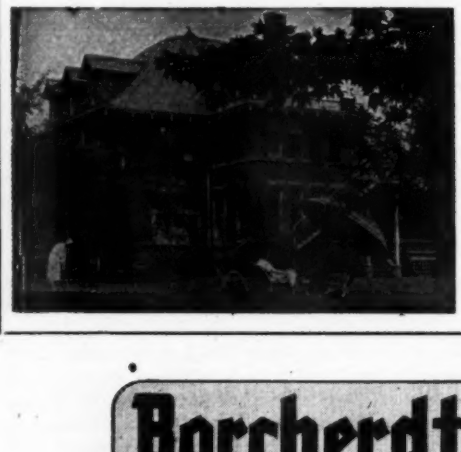
Dr. John R. Nickerson, of Akron, Ohio, has entered practice at Heron Lake and will operate the local hospital.

Dr. Nickerson was discharged from the Navy several months ago, having been in service since May, 1943. Prior to his induction into the armed forces, he had practiced in several large eastern hospitals and at the same time was engaged in postgraduate study. He has been associated with some of the foremost doctors in the country and has held several responsible posts; among them, physician and surgeon in charge of a seventy-bed hospital.

* * *

Dr. Carl A. Peterson, Chisago City, and Dr. H. H. Albrecht, formerly of Floodwood and St. Croix Falls, Wisconsin, but recently residing in Lindstrom, are associated in practice at the Chisago City Clinic which opened on July 15.

Dr. Peterson graduated from the University of Minnesota School of Medicine in 1942 and interned at Ancker Hospital in Saint Paul. Dr. Albrecht is a graduate of St. Olaf College and Marquette University, Class of 1942. Following the completion of his internship at St. Mary's Hospital in Duluth, he entered practice at Floodwood.



The Birches Sanitarium, Inc.

2391 Woodland Avenue

Duluth 3, Minnesota

A hospital for the care and treatment of Nervous and Mental disorders. Quiet, cheerful environment. Specially trained personnel. Recreational and occupational therapy.

Psychiatrists in Charge

L. R. Gowan, M.D. **L. E. Schneider, M.D.**

Borcherdt *Malt Soup Extract*

WITH ADDED POTASSIUM CARBONATE 1.1%

FREE SAMPLE

Dr. .....

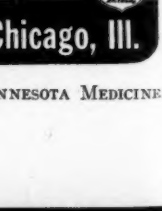
Address .....

City .....

State .....

FOR CONSTIPATED BABIES

Borcherdt Malt Soup Extract is a laxative modifier of milk. One or two teaspoonfuls dissolved in a single feeding produce a marked change in the stool. A Council Accepted product. Send for free sample.



BORCHERDT MALT EXTRACT CO., 217 N. Wolcott Ave., Chicago, Ill.

Dr. Samuel H. Boyer, Sr., Duluth, who was eighty on July 22, began his birthday celebration the day before when the staff of St. Luke's Hospital surprised him with a party in the reception rooms at the hospital. Among those extending felicitations was Dr. William R. Bagley, who entered the pioneer medical field seven and half years after Dr. Boyer came to Duluth in 1891, shortly after his graduation from the University of Pennsylvania Medical School.

In commenting on his birthday, Dr. Boyer said that when one reaches eighty he gets "a little tired after activity and sometimes dozes when he ought to be awake, but the joys of living still persist."

* * *

Dr. George W. Drexler, who has been in military service since August, 1942, is now associated in practice with Dr. Thomas E. Havel at Blue Earth.

A native of Douglas County, where he grew up at Brandon, Dr. Drexler graduated from St. John's University at Collegeville and took his medical degree at the University of Minnesota. He interned at the Minneapolis General Hospital in 1940 and 1941. At the time of his entry into service he was associated with the Long Prairie Clinic at Long Prairie. Of Dr. Drexler's forty-one months of service, eighteen of them were spent at Fort Snelling and twenty-three in a station hospital in the Southwest Pacific.

* * *

Drs. Henry C. Doms and Roy F. Pierson, of Slayton, have been joined in partnership by Dr. Richard M. Johnson, of Manning, Iowa.

Dr. Johnson is a native of Berkeley, California, where he attended St. Mary's College, graduating from San Jose. He took his medical degree at the University of Nebraska School of Medicine in 1942, and served his internship and residency in San Jose, where he also entered practice and remained until his induction into the Navy in August, 1944.

His assignments during his two years in service were on two hospital ships—one an LST and the other, one of the Navy's largest hospital ships—both in the South Pacific area.

* * *

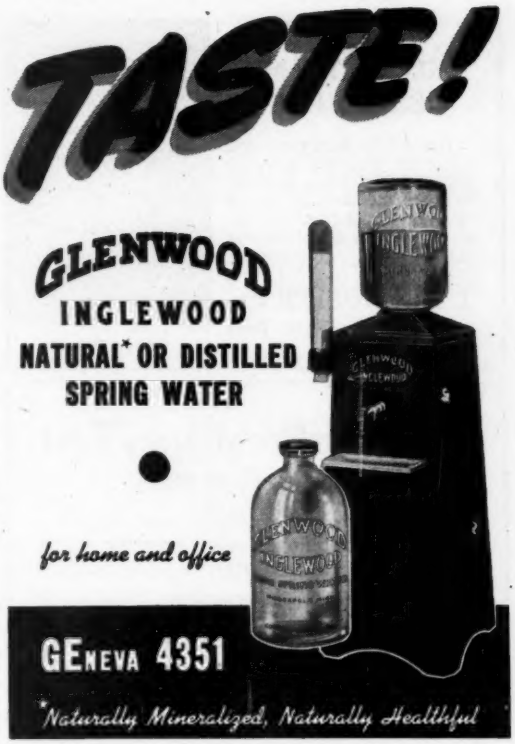
Dr. Marjorie A. Hartig, daughter of Dr. Hermina Hartig, Minneapolis, and Dr. John Beer, son of Mrs. A. J. Beer, of Saint Paul, were married in St. Mary's Church in Saint Paul on Saturday, August 10.

The bride, in marrying a physician, followed the example set by her mother, who married Dr. Hugo Hartig, a classmate at the university, in June, 1914, the day after both had graduated. Dr. Marjorie and Dr. Beer graduated together from the University of Minnesota in 1939, but he has since been away in military service.

Dr. Hermina Hartig, chief physician of the Minneapolis Board of Education, was one of two women in a class of thirty-two; her daughter was one of eight women graduating in a class of 120.

* * *

Dr. Rochfort W. Kearney, of Mankato was released from active duty in the Army Medical Corps on July 2. Dr. Kearney, a lieutenant colonel, entered service on March 27, 1943, and his first assignment was at



ACCIDENT • HOSPITAL • SICKNESS
INSURANCE
FOR PHYSICIANS, SURGEONS, DENTISTS EXCLUSIVELY

ALL PREMIUMS COME FROM PHYSICIANS SURGEONS DENTISTS ALL CLAIMS GO TO

$5,000.00 accidental death $25.00 weekly indemnity, accident and sickness	$8.00 Quarterly
$10,000.00 accidental death $50.00 weekly indemnity, accident and sickness	$16.00 Quarterly
$15,000.00 accidental death $75.00 weekly indemnity, accident and sickness	$24.00 Quarterly
$20,000.00 accidental death $100.00 weekly indemnity, accident and sickness	$32.00 Quarterly

ALSO HOSPITAL EXPENSE FOR MEMBERS WIVES AND CHILDREN

86c out of each $1.00 gross income used for members' benefits

$2,900,000.00 INVESTED ASSETS
$13,500,000.00 PAID FOR CLAIMS

$200,000.00 deposited with State of Nebraska for protection of our members.
Disability need not be incurred in line of duty—benefits from the beginning day of disability

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION
44 years under the the same management
400 FIRST NATIONAL BANK BUILDING • OMAHA 2, NEBRASKA

TAILORS TO MEN SINCE 1886

The finest imported and domestic woolens such as **SCHUSLER'S** have in stock are not too fine to match the hand tailoring we always have and always will employ.

J. T. SCHUSLER CO.
379 Robert St. St. Paul

George Dejmek

Friedman Pregnancy Test

Requires Only 48 Hours
PRICE $5.00
WRITE FOR FREE MAILING TUBE AND VIAL
Established 1938
Pregnancy Diagnostic Laboratories
DYSART, IOWA

Complete Optical Service
LENS GRINDING
DISPENSING
CONTACT LENSES
EYE PHOTOGRAPHY
N. P. Benson Optical Co., Inc.
Established 1913
Main Office and Laboratory, Minneapolis, Minn.
— BRANCH LABORATORIES —
Aberdeen - Duluth - Eau Claire - Winona
Bismarck - La Crosse - Wausau - Stevens Point
Albert Lea - Rapid City - Huron - Beloit - Brainerd
Rochester

SPECIALISTS ARTIFICIAL LIMBS

Extension Shoes and Clubfoot Corrections . . . Abdominal and Arch Supports . . . Braces for Deformities . . . Elastic Stockings . . . Expert Truss Fitters . . .

Seelert Orthopedic Appliance Company
18 North 8th Street
Minneapolis MAin 1768

Walter Reed Hospital. Later he was attached to the 182nd General Hospital as chief of General Surgery and assistant chief of the Surgical Service in England. Immediately preceding his discharge he was chief of Surgical Service at the Mayo General Hospital, Galesburg, Illinois, where he was engaged in neurological, general, orthopedic and gynecological surgery.

Dr. Kearney is a graduate of Northwestern University Medical School. He interned at Ancker Hospital in Saint Paul and later had a surgery fellowship at the Mayo Clinic.

* * *

Dr. Clifford Dale Snyder, who has been assisting Dr. Arno W. Sommer with his practice in Elmore since his de-activation from military service on January 24, 1946, has entered practice at Kiester, which has been without a doctor since the second year of the war.

Dr. Snyder graduated from the University of Minnesota School of Medicine in 1943 and served his internship at Fresno, California. He was inducted into the Army in January, 1944, and, in addition to service in various hospitals in this country, he was on assignment in France, Belgium and other European locations for fifteen months. When retired, he was a captain in the Army Medical Corps.

Dr. and Mrs. Snyder are both natives of Faribault County and well acquainted in the community.

* * *

"One of the nicest birthdays I ever had," was Dr. Thomas Hall Shastid's comment on the celebration of his eightieth birthday in Duluth on July 19. Letters and telegrams arrived from all over the country, and his offices were a bower of flowers from friends and well-wishers who remembered the day.

Dr. Shastid began his medical studies when his father made him his apprentice on his tenth birthday. He graduated from Columbia University Medical College when he was only twenty-one, having been admitted on his apprenticeship certificate from his father. His extensive work in ophthalmology has won him both national and international honors. A prolific writer, he reserves his forenoons and all day Saturday and Sunday for writing and confines his office hours to afternoons of week days. Although he writes between 500 and 1,000 words daily, he says he cannot find time to write all that he would like. His published work includes thirty-five volumes, three of them novels.

* * *

The appointment of Dr. Albert V. Stoesser, associate professor of pediatrics at the University of Minnesota Medical School, as representative to the Scientific Exhibit for the Section on Pediatrics for the 1947 Session of the American Medical Association, has been announced by Dr. Thomas G. Hull, director of the exhibits. Dr. Stoesser will be responsible for setting up a good series of exhibits on pediatric subjects at the next meeting of the AMA. In the past pediatrics have been more or less submerged by other exhibits in the Section on Internal Medicine.

Dr. Stoesser was also made chairman of the Committee on Press Releases for the American College of Allergists at their meeting in San Francisco. At the

THE VOCATIONAL HOSPITAL

TRAINS PRACTICAL NURSES

Nine months Residence course, Registered Nurses and Dietitian as Teachers and Supervisors. Certificate from Miller Vocational High School. VOCATIONAL NURSES always in demand.

EXCELLENT CARE TO CONVALESCENT AND CHRONIC PATIENTS

Rates Reasonable. Patients under the care of their own physicians, who direct the treatment.

5511 Lyndale Ave. So. LO. 0773 Minneapolis, Minn.

REST HOSPITAL

A quiet, ethical hospital with therapeutic facilities for the diagnosis, care and treatment of Nervous and Medical cases. Invites coöperation of all reputable physicians who may supervise the treatment of their patients.

PSYCHIATRISTS IN CHARGE
Dr. Hewitt B. Hannah
Dr. Joel C. Hultkrans

2527 2nd Ave. S., Minneapolis. Phone At. 7369

same time he was appointed to the editorial board of *Annals of Allergy*. According to Dr. Stoesser, the committee, which was organized in response to numerous requests from allergists all over the country, will answer many of the articles on allergy which are being published in newspapers and popular magazines, and which amount to little more than "trash," in order that the public may be informed of the truth.

* * *

Dr. William H. Feldman, professor of comparative pathology at the Mayo Foundation, flew to London on July 2 to give the Harben Lecture, which is sponsored annually by the Royal Institute of Public Health and Hygiene.

While abroad Dr. Feldman will also lecture in other parts of England, France, Denmark, Sweden and Portugal. His subjects will be "Chemotherapy of Tuberculosis," "Basic Consideration of Chemotherapy and Tuberculosis," "An Evaluation of the Efficacy in Tuberculosis of Sulfonamides, Sulfones and Certain Other Substances," "The Effect on Tuberculosis of Antagonistic Substances of Microbial Origin with Particular Reference to Streptomycin."

Dr. Feldman will also speak on "Antibiotics in Tuberculosis with Special Reference to Streptomycin" at the Pasteur Institute in Paris, at a meeting of the British Tuberculosis Association at Oxford, England, at a meeting of the Antituberculosis Association in Stockholm, Sweden, at the University of Copenhagen, Denmark, and in Lisbon, Portugal, where he will participate in an International Course on Medicine and Surgery of Emergency.

Dr. Harold A. Christiansen and Dr. Bernard N. Karleen, of Minneapolis, have opened offices in partnership at Jackson.

Dr. Christiansen graduated from the University of Minnesota School of Medicine in 1938 and interned at the Minneapolis General Hospital. From there he went to the North Dakota State Hospital at Jamestown, where he was a member of the staff for a year and a half. He was on duty in the European Theatre for five years and also served at an evacuation hospital in this country. Since his discharge from service he has been taking postgraduate work in internal medicine and diseases of the eye at the university.

Dr. Karleen is also a graduate of the University of Minnesota Medical School. He interned at the Receiving Hospital in Detroit, Michigan, and had a year's residency at Blaine Hospital in Detroit. He, too, was a member of the staff of the North Dakota State Hospital for a year and a half. Prior to entering military service he was practicing in Balaton, Minnesota, for over a year. A member of the Army Air Force, Dr. Karleen was assigned to the China-India-Burma Theatre for three years. Since his discharge he had been doing postgraduate work at the university.

* * *

Dr. Allen J. Blake, Hopkins, recently established something of a record in getting back into private practice from military service. Discharged on a Thursday afternoon, he began to work with his brother, Dr. James A. Blake, on Friday morning.

Dr. Blake, who is a member of a family of four

physicians, father and three sons, entered the Army Medical Corps in January, 1944, following his graduation from Marquette University, Milwaukee, Wisconsin. He served for sixteen months in the China-India-Burma Theatre where he was commanding officer of a 75-bed hospital supporting railroad troops. In addition, Doctor Blake and his staff were responsible for most of the medical care of the patients in a 75-bed civilian hospital operated by the American Baptist Mission, which had lost its personnel to the emergency demands of war. As a result, the army doctors delivered babies and took care of various sorts of ailments.

Returned to the States last January, except for a forty-five-day terminal leave, Dr. Blake was on duty at Fitzsimons Hospital in Denver until sent to Camp Atterbury prior to separation from service.

Captain Paul Blake, another brother, who was in combat duty overseas, is still in service. Dr. James A. Blake was discharged from the Army some months ago and has since been practicing with his father, Dr. James Blake, in Hopkins.

* * *

The Hennepin County Medical Society has announced the return to practice of the following members:

Dr. U. Schuyler Anderson—1951 Medical Arts Building. Dr. Anderson enlisted in August, 1942, and spent ten months of his service in England.

Dr. Bernard A. Cohen—3 West Twenty-sixth Street. Dr. Cohen entered the Navy in June, 1944, and was on duty for a year in the South Pacific.

Dr. Maurice C. Gilbert—offices at 330 Broadway. A captain in the Army, Dr. Gilbert was inducted in March, 1944, and served as chief of medical service at Fort Storey, Virginia.

Dr. I. M. Goldberg—325 Medical Arts Building. Dr. Goldberg entered service in September, 1943, and served ten months with a construction battalion in the Hawaiian Islands and six months in the Philippines. He was a commander in the Navy.

Dr. Wayne S. Hagen has resumed his practice of internal medicine with offices at 800 Physicians and Surgeons Building. A lieutenant colonel in the Army Air Force, Dr. Hagen entered service in December, 1940, and served as chief of medicine and commanding officer at the Ft. McDowell, California, hospital.

Dr. Albert T. Hayes—1149 Medical Arts Building. Inducted into service in July, 1943, Dr. Hayes was assigned to Oak Ridge.

Dr. Herbert W. Jones—5 West Lake Street. Dr. Jones entered the Army in January, 1941, and was two years in North Africa and Italy.

Dr. Vernon L. Lindberg—eye specialist—has resumed his practice at 707 Physicians and Surgeons Building. Entering service in August, 1942, Dr. Lindberg was stationed in Oklahoma City and San Antonio and later was on assignment at Oak Ridge, Tennessee.

Dr. Harold E. Miller—1531 Medical Arts Building. Dr. Miller was inducted into the Army in September, 1942, and served at Fitzsimons General Hospital, Denver, Colorado.

Dr. Lawren B. Nesset—2929 Bloomington Avenue. A first lieutenant in the Army, Dr. Nesset entered service in April, 1944, and was with an artillery unit in the European Theatre for six months.

Dr. Edward G. Olsen—511 Medical Arts Building—urologist. Dr. Olsen entered service in July, 1943, and was on assignment at Oak Ridge.

Dr. Benjamin J. Phalen—surgeon—La Salle Building. Dr. Phalen enlisted in the Army Air Corps in September, 1942, and served in Texas.

Dr. Herbert Peterson—607 La Salle Building. Dr. Peterson entered service in the Navy in October, 1943.

Dr. Frederic W. Wipperman, eye specialist, has reopened his offices at 1921 Medical Arts Building. Dr. Wipperman entered the Army in March, 1942, and was on assignment in the Aleutians and at Wold-Chamberlain Field.

* * *

Katharine J. Densford, director of the University of Minnesota School of Nursing, left for England on August 9, to attend two nursing conferences. The first was the board meeting of the International Council of Nurses held in London on September 3 and 4, with representatives from forty countries. The other was the meeting of the grand council of the Florence Nightingale International Foundation, also in London on September 11 to 13. The Foundation, which is sponsored by the International Council of Nurses, is an endowed trust to provide postgraduate education in nursing.

Miss Densford is president of the American Nurses' Association.

THE MARY E. POGUE SCHOOL

For Retarded and Epileptic Children

Children are grouped according to type and have their own separate departments. Separate buildings for girls and boys.

Large beautiful grounds. Five school rooms. Teachers are all college trained and have Teachers' Certificates.

Occupational Therapy. Speech Corrective Work.

The School is only 26 miles west of Chicago. All west highways out of Chicago pass through or near Wheaton.

Referring physicians may continue to supervise care and treatment of children placed in the School. You are invited to visit the School or send for catalogue.

26 Geneva Road **Wheaton, Ill.** **Phone: Wheaton 319**

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE TREATMENT OF BRONCHIAL ASTHMA. Vincent J. Derbes, M.D. Instructor in Medicine and in Preventive Medicine, Tulane University of Louisiana School of Medicine; Assistant Visiting Physician, Charity Hospital of Louisiana; Director of Department of Allergy, Ochsner Clinic; Fellow, American College of Allergists; member American Academy of Allergy. And Hugo Tristram Engelhardt, M.D., F.A.C.P., Instructor in Clinical Medicine, Baylor University College of Medicine, Houston, Texas; Physician, Humble Oil and Refining Co., Houston; Adjunct in Medicine, Jefferson Davis Hospital, Houston; Formerly Instructor in Medicine, Tulane University of Louisiana School of Medicine and Visiting Physican, Charity Hospital of New Orleans; Fellow, American College of Allergists. 466 pages. Illus. Price, $8.00, cloth. Philadelphia: J. B. Lippincott Co., 1946.

PENICILLIN—Its Practical Application. Sir Alexander Fleming, F.R.C.P., F.R.C.S., F.R.S. Nobel Prize Award, discoverer of penicillin; Professor of Bacteriology, University of London; St. Mary's Hospital; and twenty-eight contributors in special fields of medicine. 380 pages. Illus. Price, $7.00, cloth. Philadelphia: Blakiston Co., 1946.

PSYCHOTHERAPY IN GENERAL MEDICINE. Report of an Experimental Postgraduate Course. Geddes Smith, Associate the Commonwealth Fund. 38 pages. Price 25c, paper cover. New York: Commonwealth Fund, 1946.

ANESTHESIA IN GENERAL PRACTICE. Stuart C. Cullen, M.D., Associate Professor of Surgery (Anesthesiology) State University of Iowa College of Medicine. 260 pp., illus., $3.50. Chicago, Illinois: The Year Book Publishers, Inc. 1946.

This volume is intended, as the author states, "not as a complete text but rather as a manual useful to the medical student, the part-time anesthestist and others who may be called upon to employ depressant drugs, alleviate respiratory depression or obstruction and treat hypoxia or shock." The types of anesthesia more frequently employed in general practice, namely—inhalation and spinal, are discussed practically, and the signs of anesthesia are systematically reviewed; appropriate emphasis is placed upon avoiding complications in using any depressant drug.

The section dealing with curare is well done and is recommended to those doing general surgery; the subject of oxygen therapy is worth reading by anyone in the practice of medicine. It is gratifying to have suitably trained people concerned with the problem of shock. The author not only clearly and concisely discusses the "Recognition and Treatment of Shock" but also challenges the anesthetist thusly: "the surgeon's attention should not be distracted from the surgical procedure and it is more convenient for the anesthetist than for the surgeon to assume responsibility for the diagnosis and treatment of shock."

M. J. O. GULLINGSRUD, M.D.

Wheel Chairs and Crutches for Sale or Rent
Specialists in Braces for Deformities
Abdominal and Arch Supporters
Elastic Stockings
Expert Truss Fitters
★
Palm Orthopedic Appliance Co.
Garfield 8947 or Van Buren 1551
54 West 4th Street Saint Paul 1, Minnesota

Practical Nursing Course
Nine months' course open to high school graduates or women with equivalent education.
For further information
write
Mrs. Lydia Zielke, Supt. of Nurses
FRANKLIN HOSPITAL
501 Franklin Avenue Minneapolis 5, Minnesota

Classified Advertising

STATE HOSPITAL has permanent position for physician on staff. Special training not required. $300 per month. Address D-198, care MINNESOTA MEDICINE.

PHYSICIANS OFFICE FOR RENT—Excellent location for general practitioner in a new modern building at 620 Fourth Street, White Bear Lake, Minnesota. Large reception room is shared with dentist who has very good practice. Telephone, Emerson 5363, Saint Paul.

ASSOCIATE WANTED—By general practitioner. Excellent hospital facilities. Well-equipped office. Dr. L. A. Veranth, St. Cloud, Minnesota.

GOOD POSITION open for medical technician. No x-ray. Please give experience and references. Address D-200, care MINNESOTA MEDICINE.

PHYSICIAN WANTED—Good country town with drug store, good schools and churches. An exceptionally large territory. Address D-201, care MINNESOTA MEDICINE.

WANTED—Female technician who can do laboratory and x-ray work, in medical firm situated in lake region in Minnesota. Good salary from the start. Address D-190, care MINNESOTA MEDICINE.

WANTED—Well-qualified young physician interested in internal medicine and general practice for association with well-established general surgeon in suburbs. Address D-176, care MINNESOTA MEDICINE.

PHYSICIAN WANTED — Scandinavian community without doctor wants physician-surgeon. Nearly new modern home and office combined, occupied by former doctor and available at reasonable rent. No investment required for dwelling and office. Territory established. Thriving farm and dairy community. John O. Huso, Chairman, Commercial Club Committee, Storden, Minnesota.

WANTED—Physician—former serviceman, Gentile, Protestant, Minnesota graduate—for Lake Minnetonka practice. New quarters, ground floor, available October first. Address D-202, care MINNESOTA MEDICINE.

PERSONALIZED DUPLICATE-SIX RECEIPTS—Your Name, Profession, Phone and Address printed on each receipt at no additional cost over ordinary receipts. 504 receipts in duplicate to a book—book lies flat when opened. Price—One book, $2.25. Samples and quantity prices by request. Spillane's, 2121 Chicago Avenue, Minneapolis 4, Minnesota.

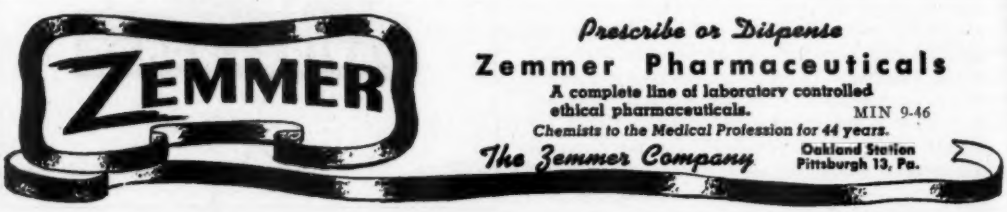
FOR SALE—Cambridge-Hindle electrocardiograph, portable model. First-class condition. Address D-203, care MINNESOTA MEDICINE.

OFFICE SPACE FOR RENT—Two modern office suites available, The Spring Building, Lake Harriet Loop (43rd and Upton Avenue South, Minneapolis). Three dental suites occupied, two medical open. Will arrange and finish to suit responsible physicians. Very fine business center serving large area upper middle bracket home owners. A splendid opportunity. Phone Whittier 2766, or call at The Spring Company.

FOR SALE—Shock proof x-ray mobile unit with fluoroscope. Will sell reasonable. Address D-205, care MINNESOTA MEDICINE.

WANTED—Lady technician for x-ray and laboratory work. All equipment up-to-date and complete. City in West Central Minnesota. Address D-204, care MINNESOTA MEDICINE.

FOR SALE—MEDICAL SUPPLIES: Roger Anderson Ought-O-Matic splint, complete. Cost $400.00; will sell for $150.00. Emerson Clinic, 7th and Mounds Boulevard, Saint Paul, Minnesota. Telephone, Tower 1393.

WANTED—Young doctor to take over lucrative practice in very prosperous Red River Valley community; large territory without competition; collections at least 95 per cent; gross about $15,000. Modern steam-heated office (5 rooms), with complete line of equipment including x-ray, available at moderate rental. No investment required. Residence will be provided. Apply immediately. Address D-206, care MINNESOTA MEDICINE.

ASSISTANT WANTED—In general practice and surgery. Liberal salary. Address D-197, care MINNESOTA MEDICINE.